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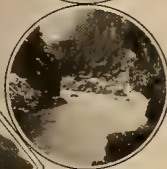
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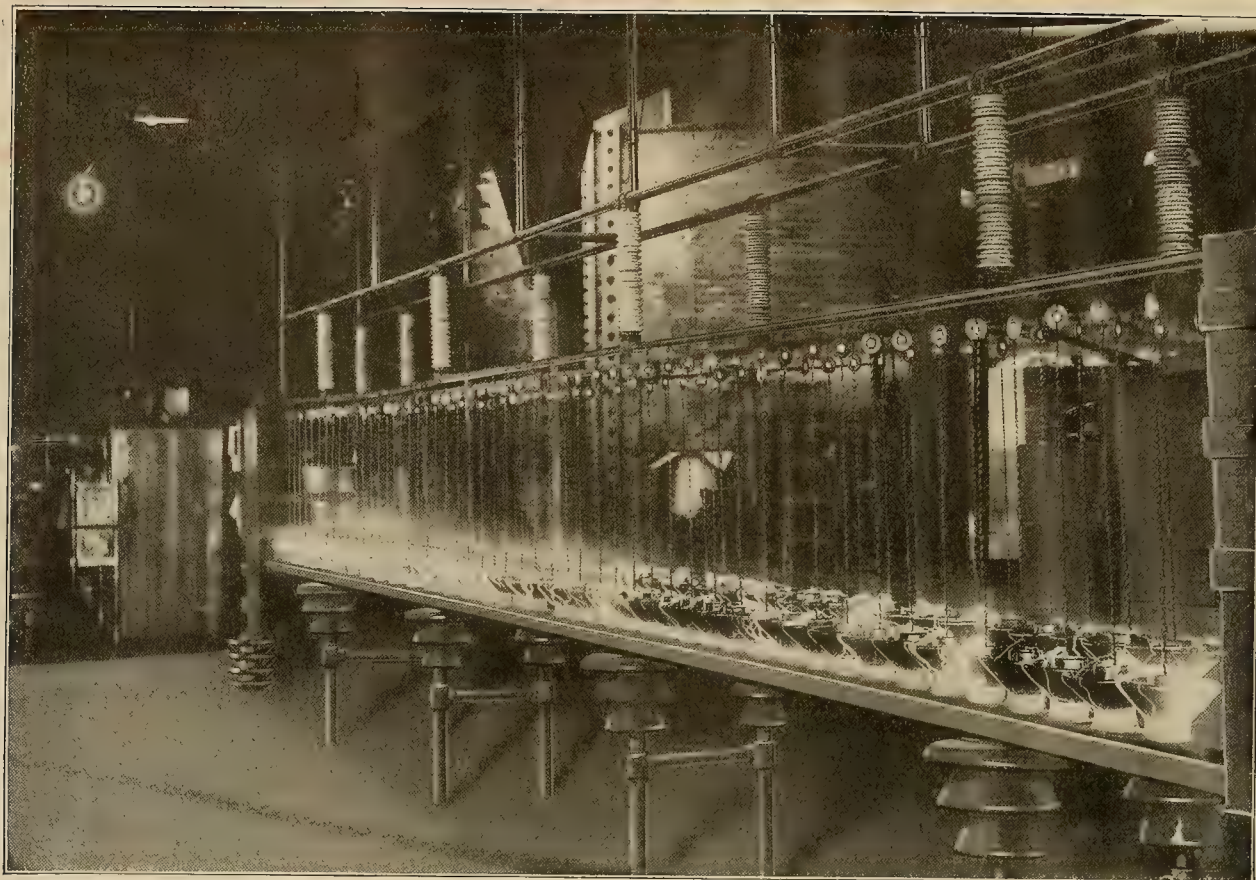
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Our Role in Your Conventions

CONVENTIONS are an essential part of the life of an industry. By means of them ideas are interchanged, problems discussed and friendships made or renewed. Much good is derived from participation in their sessions.

Many ideas gleaned from the discussions are taken home and applied by the delegates. Many, too, are overlooked. And then there are the hundreds who are deeply interested in the convention happenings but who are not fortunate enough to be able to attend.

For both the convention delegate and the man who from necessity is forced to remain at home, the technical journal performs a great service. Its reporters attend all convention sessions, even participate in the discussions. They are trained to pick the wheat from the chaff, to distinguish between the important and irrelevant.

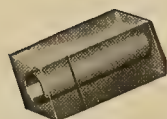
Their reports, published in the trade press, refresh the mind of him who attended the convention and paint a vivid word picture of occurrences for him who was not able to attend. These reports once published become a part of the literature of industry.

To the average reader, it may seem that undue space is given to chronicling the happenings at the eighth annual convention of the Pacific Coast Electrical Association just held at Coronado, Calif. The student of the industry, however, will derive much good therefrom, for he will find in the report a review of the progress of our great industry during the past year.

The Double Cure for Groping



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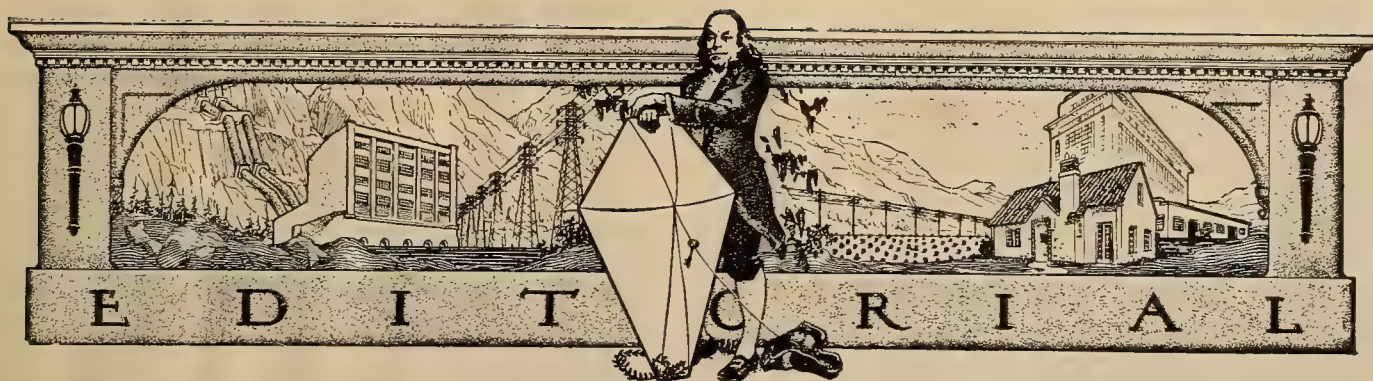
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Common Sense in Public Relations

SOMEBODY said, once upon a time, that nothing was so uncommon as common sense. The keynote of the masterly address delivered by Richard E. Smith before the Public Relations Conference of the Pacific Coast Electrical Association at Coronado, Calif., was a plea for the application of that uncommon quality, common sense. Common sense, plain dealing, straight thinking, the frankest kind of publicity, the attitude of one who has nothing to conceal, is the prescription recommended to the public utilities as the first step in the solution of the public relations problem.

THE consumers, and really that means all the people, are unimpressed by acres of newspaper advertising, tons of circulars and the like, unless that very propaganda is brought to life by the fulfillment of all these glittering promises through the meter man, the bill collector, the man or the woman at the counter who constitute the active, physical contact between the company and those whom it serves. And, let us not forget the telephone operator, an asset if she can put a smile, rather than a frown, into the way she says, "Hello."

THE public relations question has been regarded by some people as a mass problem, a matter that can be handled at wholesale, like the production of canned meats or Ford automo-

biles. As Mr. Smith pointed out, it is nothing of the sort. It is an individual problem, and must be attacked on a unit basis, each unit constituting a complete problem in itself. What is a page of general, impersonal advertising compared to an irate consumer who stalks into the company's office with fire in her eye to enter a complaint of some failure in the service?

R. A. BALZARI would say, "Send her away with a smile." Right, and more, greet her with a smile. Keep your own temper, and she will recover hers. Then, let Mr. Counterman get busy on the complaint. Straighten it out, and then call her up, or write, and see if the cause of the trouble has been eradicated. An advertisement is really a promise, an obligation, too. It lies with the personnel of the utility to make that promise, that obligation, good.

PUBLIC relations is not a passing fancy, something that has suddenly sprung into life like a mushroom in the night. It is a direct consequence of the economic evolution of industrial organization, by which, for excellent reasons, great business enterprises have grown out of many little ones. "The public be told," is a good motto for a start. The responsibility that rests upon the personnel of the great public utilities, from the highest to the lowest, is the gospel that must be preached without cessation for generations to come.

Political Economy and Economy in Politics

IN signing the new tax-reduction bill, President Coolidge says, in part, "With some \$12,000,000,000 of tax-exempt securities now outstanding and \$1,000,000,000 of new issues each year, it is idle to propose high surtaxes. A man with a large inherited or accumulated capital is told he must pay one-half of his income to the government if he invests it in **productive** business, but he is invited to be relieved of all tax by the simple expedient of withdrawing from business and investing in tax-exempt securities. This does not mean that wealth in existence is taxed; it is not; it escapes. It does mean that **initiative and new enterprises are throttled.**"

It has been proposed to the voters of the State of California that they authorize the issuance of a half-billion in bonds for the purpose of acquiring an unregulated monopoly of the production of power. Through condemnation proceedings, the existing power companies would be taken over, and away goes the initiative, economy and all the other advantages of private ownership, and in their stead are substituted an army of political hangers-on, the construction of a great political machine in the hands of five super-powered commissioners, and the creation of a great lump of tax-exempt securities by which the rich will succeed in evading their proportion of the tax burden of the country at the expense of every wage-worker, salaried man, and modest business enterprise, who will have to make up the deficit, directly or indirectly, for the cost of government must be met.

Political economy is one thing. Transposed there is no economy in politics, if one may believe what history has taught us in the record of similar incursions of the government into the field of private business.

Education in the Printed Word

SOME odds and ends of thousands of years ago, just when is of no particular importance, man conceived the idea of trying to devise ways and means of recording his doings. The Chaldeans and Babylonians began the collection of manuscripts upon which the scribes, historians and priests had laboriously inscribed hieroglyphics setting forth the glories of their monarchs. Slabs of clay, baked hard, probably made up the first circulating library, except that it did not circulate to any marked extent. Nothing short of an elephant or two could possibly take away an editorial paragraph from the Babylonian newsstand.

It is interesting to note that the names that go down in history are those of the scholars, students, scientists and investigators, rather than the accumulators of great fortunes and that the records of the past, meager as they are, are more precious than gold or jewels. In fact, the desire to record and preserve the story of events is taken as the first sign of the development of mentality in man.

In these days of the prolific production of the printed word, and its lavish dissemination everywhere, it would seem difficult for the student to discriminate between that which is and that which is not worth while. In the mass of piffle displayed on the newsstands of today, the trade, class and technical journal finds no place. Education, knowledge and understanding would be more popular if they could be acquired without exertion, and it is precisely the qualities that make men read the periodicals pertaining to their calling that make them leaders in the industry they serve. If we were running the personnel department of some great corporation, we would be most interested in knowing what our employees read.

Why Not an Industrial Heating School for the West?

INDUSTRIAL heating schools have been held on two occasions in the East. Attended in large numbers by men from the central stations of the country, and by operators of industrial plants, and conducted under the auspices of the National Electric Light Association with the cooperation of two of the largest manufacturers of electrical equipment, these schools have been productive of excellent results. By applying the knowledge obtained at these schools the men in attendance have added load to central station lines that totals millions of kilowatt-hours and hundreds of thousands of dollars in revenue. Such a load has many desirable features apart from that of revenue. It would seem advantageous to the electrical industry of the West to sponsor such a school in this territory. There are numerous opportunities for practical observation of working equipment and there is available a large fund of information relative to installations that have been working for long periods. Manufacturers of heating equipment are glad to cooperate even to the extent of supplying trained men for presenting the various industrial applications of electricity and this information would be of interest not only to central station sales forces but to the actual operators of industrial plants. These operators would be quick to sense the advantages of improved product, reduced cost of production and minimized hazard to employees. The united action of all concerned in the promotion of such a school should produce benefits to all branches of the electrical industry.

A Committee of Judges Speaks on Municipal Ownership

ANNUALLY since 1917 the National Association of Railway and Utility Commissioners' committee on public ownership and operation has reported unfavorably upon such ownership and operation, holding that it is neither practicable nor justifiable. In its report just issued the committee reiterates its stand and points out the reaction against public ownership of utilities in several countries where it has in some degree prevailed. Portions of the report bear out the contentions of the electrical industry in

the West, where proponents of municipal ownership are forever harping upon the economies of their scheme. Of particular interest to the industry are the following quotations from the report of the committee:

"Municipal ownership of electric light and power is conceived to furnish service to the inhabitants of the municipality, and there can be no successful interconnection of municipal electric light and power plants which will serve the rural population and carry to the farmer and his family the conveniences of the city and of other industries. In view of the rapidly increasing municipal and state indebtedness due to purely governmental functions, it should at once be apparent that the public utilities should be owned and developed through private capital and regulated by the state, rather than an attempt by the government to enter into this business with the increased tax burden which necessarily follows and which is ordinarily accompanied by inefficient management and stagnation.

"In no other industry is there such a diverse ownership by the public. No less than two million stockholders own the electric light and power companies, of which more than six hundred thousand own the securities of the companies directly serving them. . . . Every bank depositor and every insurance policy-holder is an indirect owner.

"It is interesting to note that the Bureau of Labor Statistics of the United States Department of Labor in a recent report stated that in spite of constantly increasing costs of labor, construction and materials the average electric light and power rate in the United States is 5.1 per cent lower than in 1914. . . .

"In 1922 there were 1,992 municipal electric plants in the United States serving 2,031 communities having less than 7 per cent of the population of the country; of these 1,446 generate their energy, 47 both generate and purchase energy, and 499 purchase energy from private companies. There were 4,106 private companies serving 93 per cent of the population of the country. The private companies produced 96 per cent of the electricity and the municipal plants 4 per cent. According to the United States Census of 1917 the kilowatt-hour generation of the municipal plants decreased from 4.9 per cent of the total in 1907 to 4.1 per cent in 1917. About 560 municipal electric plants have been either abandoned or sold to private companies.

"As to comparative rates of electric plants the latest United States Census stated: 'The average rates received by municipal plants for their current are much higher than those charged by the other group, as is indicated by the fact that, while they sell only 4 per cent of all current, they receive 7.9 per cent of the income from the sale of current.' The census also is eloquent on the subject of the practice, or lack of practice, on the part of municipal officials in keeping records or figures of operation."

The opinions of the men who make up the regulatory bodies of the several states of the nation should carry much weight. Familiar as they are with the innermost workings of the privately owned utilities these men are in a superior position to judge the merits of private versus municipal ownership. They have no ax to grind. They are public servants charged with seeing that the public is served,—adequately and economically. The report of this committee should be given wide publicity. We urge that the utilities make an effort to see that its text is placed in the hands of all of their stockholders, and better still, all of their consumers.

Private Relations Is a Start

Toward Good Public Relations

SOMEBODY started something when he, or she discovered that there was such a thing as public relations. Good will, as such as been capitalized among the assets of business enterprises for many

years. However, good will, in the ordinary acceptance of the term, is held to embrace such things as patent rights, trade-marks and other things quite remote from the modern idea of the meaning of public relations.

Every business enterprise, however small or large, has a public relations problem. In its satisfactory solution lies the key to success. Again, public relations as an expression of the feeling aroused between the business and those to whom it caters, has a twin brother, private relations, a term that might be applied fittingly to the employees and officers of the business and their feeling toward one another.

The problem of private relations must be worked out first, or at least jointly with that of public relations if a satisfactory condition of the latter may be expected to be achieved. There are those employers who think that shower baths, rest rooms, and the platitudes usually found in the ubiquitous house organ are sufficient, but they are wrong. The American workman does not want to be patronized, nor does he want to be coddled. What he does most emphatically want is a decent pay check, first of all. The rest of it he can take care of himself.

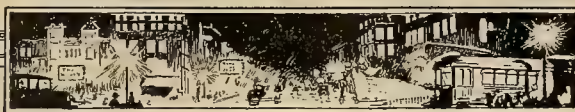
Public relations, like charity, begins at home. Given a high average of happy contented employees, secure in the feeling that good work will receive something more tangible in the way of recognition than an occasional pat on the back, and the problem of public relations will solve itself.

Electric Lights

and the Chinese Bandits

OCCASIONALLY members of a town council, who also happen to be motorists, will point to the comparative safety of traffic on unlighted country roads and will question the advisability of any street lighting whatsoever. The story of the introduction of electric lighting units in the interior towns of China as a protection against bandits will offer a good moral to these reactionary gentlemen. W. E. Fong, proprietor of the Union Electric Company, of San Francisco, is the man who is responsible for this introduction of electricity into a region where progress in lighting heretofore had not passed beyond the stage of the oil lamp. A friend of his from one of these interior villages wrote and asked his assistance in obtaining an acetylene outfit to be used as a night protection, much as the camper in the wilds relies on his bonfire to keep the wild animals at bay. Mr. Fong is a thorough believer in the method electrical and succeeded in selling an individual electric lighting plant to the town in question. So successful has its operation been and so completely have bandit raids been abandoned with that town as an objective that he has since sold four other plants to other villages. The record of reduced crime which parallels that of better lighting on the record books of our cities tells a similar tale, but for those who are not impressed with object lessons too close at home, the Chinese story may serve to carry home the point.

CURRENT COMMENT



Proponents of municipal ownership are zealous in pointing to cities which have had some measure of success with the ownership and operation of utilities.

Australia Has Bitter Taste of Public Ownership Detroit, Los Angeles, the Ontario hydro project and others are lauded for the showings which they have made but no mention is made of cities, states and communities which have failed utterly in their ventures into the realm of business.

F. G. R. Gordon in a recent issue of *The Protectionist* recounts the experience of New South Wales in its public ownership ventures. The facts and figures Mr. Gordon presents are of interest to the electrical industry of the West in view of the wave of municipal ownership propaganda which is sweeping over certain states in the Pacific Coast region. Mr. Gordon states:

In many respects the Australian states have the greatest democracy on earth. They were the first to adopt the socialistic schemes of political and economic democracy; they were the first to grant universal suffrage to all citizens, women and men; and they have made the greatest plunge into state socialism of any states anywhere.

As a result of this extensive scheme of public ownership, no one can say whether or no their public debts will ever be paid. It is pretty clear, however, that the debt of one of her most progressive states, New South Wales, can never be paid. Year by year this state has been piling up the public debt until at the present time her state debt is almost a billion dollars.

New South Wales has a population of 1,650,000, or about 41 per cent of the State of Massachusetts. Her population is much less than half that of Michigan. Imagine Massachusetts and Michigan with state debts of more than \$2,000,000,000; then you have a clear idea of the vast burden of indebtedness that rests upon the people of that socialistic state of New South Wales.

The basis for this vast indebtedness is public ownership. New forms of taxation are enacted with every session of the Legislature with the hope that some way may be found to solve her financial difficulty. But the more taxes she raises the more she spends, and the state debt grows larger and larger. Her socialized industries generally show an annual deficit. She is forced to pay, in most instances, 5½ per cent interest upon her gigantic debt. Like all governments which engage in public ownership and operation, she has duplication costs all along the line.

The situation resembles that of our education systems. We have a city school board, a state board of education, and now the cry is for a national bureau to make another duplication—one more national bureaucracy, to boss the other two, with the pomp and parade of a cabinet department.

But in New South Wales and all over Australia, there is duplication in every department, for this socialistic state owns and operates the railroads, the telephone and telegraph, some mines, hotels, cafes, factories of many kinds, markets, ships, machine shops and so on.

In order that the reader may have a clear knowledge of how these public-owned enterprises are conducted, let us show the actual condition of her railway system. The state owns 5,116 miles of railways, and they cost \$416,638,240, or \$81,436 per mile for construction. This is an average cost of \$25,000 per mile above the cost in the United States; yet railroad

labor in New South Wales is 40 per cent below the average wage in this country, and always has been.

Freight rates on these state-owned lines average 2.76 cents per ton per mile (1924) as against a little over 1 cent in this nation. If the people of New South Wales had the same rates for freight transportation that we enjoy, her people would have saved in 1922 the sum of \$22,000,000. High freight rates can not be charged to high wages in that country, for wages there average \$422 per man per year less than they are in this country. If New South Wales paid her 37,000 railway employees the same wages that we pay ours, her wage cost for 1922 would have been \$11,614,000 more than it was.

These socialized railways pay no taxes. If they paid the same (average) rate of taxation that our railroads pay, the state would have collected the sum of \$6,364,072 in 1922. Her interest charge on the railway debt is \$20,000,000 a year. Taking all these facts and boiling them down to dollars and cents, we find that these socialized railways actually lose \$27,000,000 a year in spite of the \$11,614,000 which she saves yearly by her lower wage-rates, as compared with ours.

I do not know of a single advantage that this socialistic state enjoys through public ownership—not one. The service is poor, compared with service in this nation; the system is over-staffed, as are all government-owned enterprises. If we take wages, interest, taxes and freight rates into joint consideration, and compare all these with private ownership in our nation, we find that New South Wales loses about \$39,000,000 annually because of public ownership and operation of her 5,000 miles of steam railways. And, I may add, New South Wales and all the other Australian states are plunging deeper and deeper into public indebtedness, largely due to public ownership.

Is it any wonder that she faces bankruptcy? Do we want to follow her example?

Representatives of the California Water and Power Act Committee who are touring California in behalf of the measure to be presented to the people in

Water Power Act Poorly Received by Rural Press November are not meeting with a hearty reception from the press of the state. With the exception of the Hearst and McClatchy papers the proposed bill is receiving but meager support.

The following editorial from the *Fresno Republican* is an example of the attitude which many of the editors in the rural districts have shown toward preliminary overtures of the Water and Power Act proponents:

Rumors come to us that the so-called "California Water and Power Act" is to be brought by initiative before the people of California, at the coming November election, as a ballot proposition.

This is the proposal that was beaten by the people, when submitted in November, 1922, by a heavy majority.

The citizens of California should receive with an open mind any proposal that is made on initiative, for the extension of the care by the state of the water and power resources of the public in this state.

Even though it might be better and fairer for those who favor any such proposal to bring it before our lawmakers, in the legislature, still, it is a part of our political system to permit initiative measures, on the general election ballot, and

those who urge the state to enter upon a public ownership of water and power utilities have a right to a respectful hearing on such a measure.

But the "California Water and Power Act," by whatever name it may be called, if placed on this coming November ballot, is not a new proposition. It has already been well discussed. Its advantages and disadvantages, the mistakes of judgment that it contained, are already well known to the people of the state. If there is an attempt to foist this same measure, specifically, as it was carried on the ballot in 1922, on the people of this state, it should be even more overwhelmingly beaten.

The people who are behind that proposal should at least learn by their own mistakes. They should not employ the deception that was undertaken of the voters. And they should not try to build up a great political machine, under the guise of helping local irrigation districts, as was proposed in 1922.

If the proponents of this movement honestly submit a measure authorizing the use of state credit for the financing of local irrigation or local water or power or other utilities, where the locality has itself initiated the proposal, and has assumed a fair proportion of the responsibility, and has assured itself of the need for and the industrial support for the bonds to be issued—then the proposal would be free from a large part of the objection that defeated the "California Water and Power Act" in 1922.

Cost of Propaganda

Those who favor and those who oppose the resubmission of the "California Water and Power Act" of 1922 should meet fairly the discussion that was made, in 1923, of the use of money by the opponents of that ballot measure.

Large amounts of money were, in fact, spent by both supporters and opponents of the ballot measure in 1922.

And both supporters and opponents included "interested" persons.

We have to expect that sort of thing. Financial strength was brought to the support of the measure by persons who were interested and who were malicious in their attitude toward the power companies. And power companies who felt that their investments were being menaced spent large sums of money in fighting the measure.

The mistake the power companies made was in trying to conceal the fact that they were interested in fighting the "act."

They had a right to fight it. The measure did threaten their property rights.

Why should we, as voters, be so foolish as to assume that we are to be cheated into taking sides on a question merely because a man or a measure or an institution has money enough to have a chance to "talk" to us?

The money that was spent by the power companies in hiring speakers and printing reading matter was well spent if it was honestly spent. It was our observation that much of the arguments on both sides were "bunk." But it was also our observation that much of the argument of the supporters of the measure was positively deceptive about the terms of the "act." That charge was made in the campaign and never met by any of the speakers or writers for it.

As long as we in California decide, in whatever way we do, to continue the handling of our utilities by "private" corporations, just so long should we permit them to protect their property, by proper appeal to the voters, against deceptive or confiscatory legislation.

It is a proper use of the funds of a power company to spend it, in reasonable amounts, for the expression of the interests of the power business. Just as it is to the interests of voters to know how the public money is being spent and how public officials are conducting themselves, so it is to the interest of citizens to know how the utility companies are handling their business and what is the relation of this business to our state politics and other lines of public activity.

The mistake the power companies made, in 1922, was in trying to conceal what was a perfectly obvious public function of their publicity departments.

Terrific Political Club

The people of California, however, should take the rights of the power companies into consideration in this matter only as a minor issue.

The "California Water and Power Act" proposed to bond this state for five hundred millions of dollars.

Or call it half a billion dollars.

Or call it \$500,000,000. It is big enough any way.

And that is not the whole extent of this bigness. This half billion dollars is a revolving fund.

This half billion dollars is in the hands of the members of a state board with virtually unlimited power to place large or small amounts of it in various parts of the state wherever they may see fit.

The question of investment is one entirely within their own judgment. No one can say them nay.

They can deal with an already created, well established irrigation district, or they can promote a district of their own creation. Or they can establish a "project" of their own and promote it entirely with state money.

They can go into entirely untested territory, for political reasons, and give money for the development of very questionable power opportunities under local or other political pressure. They can develop power projects, just as roads are laid out at times, on the pull of favored individuals or groups, or on popular clamor, whether there is prospect that the projects will ever pay out or not.

This is stating the thing at its extreme, it is true. Presumably, no state board would ever go this far.

But the language of the act does permit such a board, if the "act" should pass, to take steps that popular clamor would almost hang the members for.

This is the act which it is proposed to foist on the people of California again by initiative.

The disapproval of the people of initiating this measure should be expressed in positive terms.

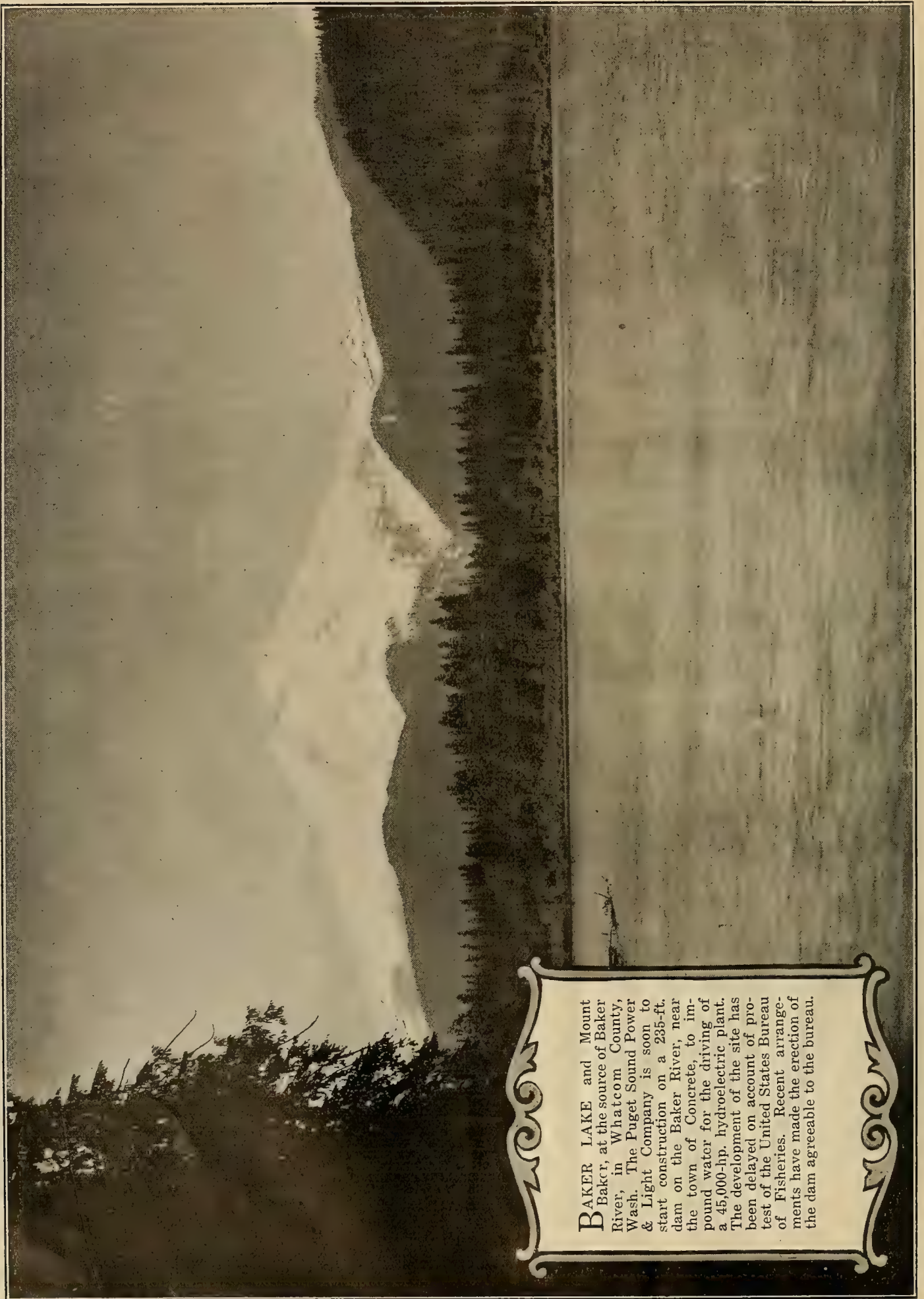
Papers in the Pacific Northwest are not overlooking the significance of the election of Franklin T. Griffith, president of the Portland Electric Power Company, to the presidency of the National Electric Light Association. The importance of a national convention of the character of the national electric gathering, to that section of the country is emphasized in the following editorial from the Portland (Ore.) Oregonian:

No effort should be spared by Oregon to bring the convention of the National Electric Light Association to Portland in 1925. Precedent favors selection of this city, for the custom of the association is to meet at the home city of its president, and it has elected Franklin T. Griffith to that office. But the city should offer an invitation, should strive for its acceptance and should provide generously for the comfort and entertainment of the thousands of leaders in the electric field that will attend.

A great opportunity will be offered by the convention to the entire Columbia River basin. In this field we have some of the best, most modern hydroelectric plants in the country, others are under construction and we have sites for others of vastly greater magnitude. We also have natural resources in abundance. The masters of the electrical world should be shown what has been done to utilize the immense water power of the Columbia River basin and what far greater possibilities remain. Their minds should be fixed on this region as their largest future field of operation.

On water power above all else this region must rely for its highest development. Coal is comparatively scarce and not of high quality, its cost is high, the supply liable to interruption by industrial troubles and its use is uneconomical. Fuel oil must be brought from California or the Rocky Mountain district, and the supply may fall short within a generation. Water power as a generator of electricity is inexhaustible, is open to none of the objections raised against coal and oil, is cheaper and its cost is less the more of it is used from any one source. It is the means of cheapening transportation by rail or inland waterway and thus can remove the handicap of distance from the world's largest markets.

By displaying its opportunities the Columbia River basin can attract the technical ability of electrical engineers and can prepare the minds of capitalists to develop its power and to employ it in manufacture. An impetus can thus be given to general development.



BAKER LAKE and Mount Baker, at the source of Baker River, in Whatcom County, Wash. The Puget Sound Power & Light Company is soon to start construction on a 235-ft. dam on the Baker River, near the town of Concrete, to impound water for the driving of a 45,000-hp. hydroelectric plant. The development of the site has been delayed on account of protest of the United States Bureau of Fisheries. Recent arrangements have made the erection of the dam agreeable to the bureau.

Public Relations Forms Theme of Coronado Convention

WITH an attendance in excess of 450, the eighth annual convention of the Pacific Coast Electrical Association, held at Hotel del Coronado, Coronado Beach, Calif., June 16-20, 1924, will go down in history as one of the most successful gatherings of electrical men ever held in the West. The unexpectedly large attendance was gratifying to both officers and members of the association in view of the power shortage and the general slack business conditions brought about by lack of rain.

A unanimous and cordial invitation was extended to the National Electric Light Association to hold its 1925 convention in San Francisco.

The convention was marked by several innovations, chief among which was the Public Relations meeting Thursday, June 19, and a meeting for the women held on Wednesday, June 18. Keen interest was displayed in both of these meetings and their success indicates that they will be important features of future conventions. A third important session was the Public Service Conference which replaced the well known Development Conference, a feature of former conventions. At this meeting leaders in the various public service fields of California outlined the problems of the utilities of the state, demonstrating that all utilities have common problems and that for the good of the public they should cooperate to the fullest extent.

Meetings of the various sections of the association showed that the past year has been an active one with many definite achievements. In the Technical Section, the work of the hydraulic power bureau in the study of control and outlet works for dams and diversion works comprised a large part of the report of the national committee. In the Commercial Section, the work in relation to appliance



FRANK A. LEACH, JR.

Vice-president and general manager of the Pacific Gas and Electric Company, who has been named president of the Pacific Coast Electrical Association to hold office during the coming year.

sales methods and the activities of the electric transportation bureau were outstanding features of the year. Other sections and committees reported similar progress.

For the first time in the history of the association the election of officers was held at the opening business meeting. This was done in order to allow the officers for the new year to hold an organization meeting before the convention adjourned. Frank A. Leach, Jr., vice-president and general manager of the Pacific Gas and Electric Company, San Francisco, was elected president of the association for the year 1924-25. The two vice-presidents are William Baurhyte, president of the Los Angeles Gas & Electric Corporation, and S. Waldo Coleman, president of the Coast Counties Gas & Electric Company, Santa Cruz. J. F. Pollard, vice-president and general manager of the Coast Valleys

Gas & Electric Company, Salinas, was elected treasurer and Samuel H. Taylor was re-elected secretary. The members of the executive committee are James B. Black, vice-president and general manager of the Great Western Power Company, San Francisco; Harry Harper, manager, Western Electric Company, Los Angeles; Charles T. Hutchinson, vice-president and general manager, McGraw-Hill Company of California, San Francisco; R. M. Alvord, General Electric Company, San Francisco; A. M. Frost, manager, commercial department, San Joaquin Light & Power Corporation, Fresno; K. E. Van Kuran, manager, Westinghouse Electric & Manufacturing Company, Los Angeles; F. O. Dolson, vice-president and general superintendent, Southern Sierras Power Company, Riverside; P. M. Downing, vice-president in charge of engineering and operation, Pacific Gas and Electric Company, San Francisco; Clyde Chamblin,

president, California Electrical Construction Company, San Francisco; and R. J. Holterman, Fobes Supply Company, San Francisco.

K. E. Van Kuran, general convention chairman, and his committees left no stone unturned to make the convention as successful as possible. Ample entertainment was provided, especially for the ladies. The golf tournament drew an exceptional number of entries and the competition for the various cups and prizes offered was close.

One of the entertainment features was a complimentary luncheon given by the Electric Club of San Diego on Tuesday, June 17, to all members and guests in attendance at the convention. In addition to an address by G. H. P. Dellman, president of the club, there were many unusual features of entertainment including a serio-comic presentation of radio, by H. N. Sessions, and character impersonations of a well-known humorist, by R. E. Smith.

First Business Meeting

Characterizing the year just closed as one of the most important and profitable in the history of the association, President L. M. Klauber summed up the achievements of the various committees in his annual address delivered at the opening business session of the convention held Tuesday, June 17. President Klauber said:

This year our divisional committees, continuing their record of really practical achievement, have functioned with energy and efficiency, and it is certain that the reports which they are presenting at this convention will be most stimulating and useful to our membership. Not only have the several section chairmen organized most constructive programs for their main committees, but sub-committees to the second and third generation have been active, with the result that a very considerable proportion of our membership has been engaged in this essential work.

The reports which are being presented at this convention, important as they are, are not by any means the sole achievement of the committees which are presenting them; for at the several committee meetings which have been held throughout the year, the frank and practical discussions which have taken place have been of great value to the members participating. Our individual members, and through them their companies, can secure no greater benefit from association work than may be derived from the intimate contact at committee meetings with their fellows from other companies engaged in similar lines of activity.

The problem for the future, if this work is not to lose interest for those engaged therein, is to bring into the committees a constantly shifting group of individuals with a fresh viewpoint and enthusiasm. While sufficient old members should be retained in each committee to secure continuity of effort, our younger members should always be afforded the opportunity and encouraged to become active. Likewise, new subjects for investigation must constantly be sought in order that meetings and reports will not degenerate into a constant reiteration of worked out material. And this committee work must at all times have the support of our company executives in order that meetings will be properly attended.

He drew attention to the opportunities for closer cooperation between the association and its sister organizations, the Northwest Electric Light and Power Association and the Pacific Coast Gas Association, and recommended that in the future arrangements be made whereby all three would be officially represented at the conventions of the others.

The California Water and Power Act was stressed by President Klauber when he said:

Upon the political horizon we discern once more the so-called Water and Power Act. That this proposition should

be put forward in California, the state looked upon by all the world as the most progressive in matters electrical, which advancement has been achieved by private initiative and resource, is astonishing. And that it should be put forth within two years after its overwhelming defeat in 1922, without change in statement or purpose, is beyond explanation.

The proponents of this Act would cause one to believe that the electrical industry in California has failed of its duty and that only state ownership and political control can rescue our state from the low point to which it has fallen. No better defense of our industry, nor refutation of the untenable arguments used by the backers of this measure, was ever made than the masterly address of President A. B. West at our annual convention in Los Angeles two years ago. His figures require no change; his arguments cannot be contradicted. Let the industry rest assured that the people will once more defeat this pernicious proposal, and this so decisively that it will never again be placed on the ballot in our state.

Commenting upon other achievements of the electric utilities, including interconnection and employee training, President Klauber stated:

Our California systems, long welded into a single unit or power pool, are being joined from time to time by additional bonds of interconnection. The wisdom of such interconnection has never been better demonstrated than during the past season of unprecedented lack of rainfall; and interconnections originally initiated as a basis of improved efficiency, have become an economic necessity.

Our member companies continue to give the greatest thought to the matter of employee training and education, not only for the betterment of the employee himself, and his usefulness to the company, but for the improvement of this point of contact between the company and the public. As has been well said by the chairman of the National Educational Committee of our association, "A man is judged by the company he keeps and it is equally true that a company is judged by the men it keeps." For every customer who comes in contact with a company official, fifty will come in contact with a company employee, and unless the latter be imbued with that spirit of courtesy, fairness and sincerity which has become the guiding principle of our industry, the company will fail to secure public good will regardless of how strong the desires of the officials may be to secure that end. This has been the thought which has culminated in the Smiles Club activity, initiated by our association.

Report of Public Policy Committee

Chief in importance among the committee reports submitted at this meeting was that of the Public Policy Committee, presented by W. L. Frost in the absence of R. H. Ballard of the Southern California Edison Company, the committee chairman. Extracts from this report follow:

Satisfactory public relations depends mainly upon two things. First: That one who wishes the friendship of the public must get it through performing real service to the public. Second: That the public must realize that such service is being rendered at the very minimum of cost.

Broadly speaking, about the only thing that distinguishes civilized from savage society is cooperative organization. Under cooperative organization, individuals and groups perform services for other individuals and groups in return for services of other kinds rendered by those other groups. That is about all there is to modern business. If every exchange of service for service is on a fair basis, everybody will be prosperous, and wealth of individual, group, and nation, will constantly increase. If the exchange between groups is on an unfair basis there may be a temporary gain on one side, and loss on the other side, but the ultimate effect is loss on both sides.

Our own electric light and power business is rendering its service upon the smallest possible basis of return—i.e., for the bare wages of the capital invested in service. We have no voice in fixing the current rate of wages of capital; those wages are fixed in the open market. Capital always has the option of engaging in our business, under this strictly regulated limitation, or of entering some one of the hundreds of unregulated industries where there is no limit. The advantages we can offer come from the safety and stability accompanying careful and efficient management of this necessary business.

Increase in the amount of service we can render for a dollar has already been achieved to a considerable degree

through power exchanges. We believe that on the Pacific Coast we are a little in advance of all others in this matter. Our lines are not only connected from Oregon to Mexico, but substantial quantities of power are being transferred from one section and from one company to another as economic needs require. The value of these power exchanges has never been more strikingly illustrated than during the present dry year. We are using steam power, wherever located, to the utmost. We are conserving stored water, wherever located, to the utmost.

We are, however, only at the beginning of the power exchange problem. While this problem may not become nation-wide for many years, the solution must in the near future involve all the Western states, and the utilization, wherever needed, of plants in widely separated water producing areas, with consequent diversities in seasonal water available.

Power exchanges are almost equally important by reason of load diversities. The problem of the future is far beyond solution by any single state; and of course, no municipality or group of municipalities can hope to solve it. The public has been somewhat confused in this matter by the use of the term "superpower." Apparently the public believes that "superpower" means some new invention for the production of power with marvelous cheapness; the transmission and distribution of it without cost, and the control by some vast organization, either private or political. The term is not a good one. The public must be brought to understand that "superpower" merely means "exchange power." At the same time the public should be given an opportunity to understand diversity and to learn of the strides that are being made in the direction of fitting together diverse sources and diverse uses of power—not indeed through the creation of a single great system—but rather, through the cooperation of separate local systems, locally controlled and under state regulation.

Customer Ownership

The Pacific Coast is far in advance of other sections of the United States in the matter of customer ownership of the electric business. This policy, inaugurated by the Pacific Gas and Electric Company, participated in by practically every important power company on the Coast, and in which the Southern California Edison Company with its 75,000 stockholders leads all the power companies of the world, is sound. It is real cooperation. The extension of the policy is as great a public service as any of us can render to state or nation. Our industry on the Pacific Coast is already in a large measure a mutual enterprise. It should become as completely a mutual enterprise as the business of any life insurance company.

The Farmer

Of all large groups in America, farmers seem to be in the most difficult situation at the present time. Many of the farmers' difficulties can be lessened by intelligent concerted action. The electric utility can and should help along these lines; particularly is this the case on the Pacific Coast, where farmers are already large users of electric service. To make them still larger users, we need only help to make them more prosperous. Electric utilities can cooperate with farm organizations, can help such organizations to get the facts respecting current conditions. This sort of cooperation may perhaps best be reached through close relations with the various farm bureaus and cooperative associations and by joint meetings at which cooperative mutual effort of farmers and the utilities serving them may be furthered. Much is being done along these lines and much more should be done in the future.

Political Ownership

No greater service can be rendered to state or nation than to oppose political ownership of business in whatever guise it may appear. We are inclined to regard these attacks as peculiar to our industry. They are not. Less than one-third of the proceedings of the Toronto Convention of the Public Ownership League of America, in September, 1923, was devoted to attacks on our industry; the other two-thirds were devoted to banks, insurance companies, railroads, telephone companies, single tax, money system, advocacy of a political school machine, etc., etc. The real aim of the leaders of this movement is communism. Most of the followers do not know this, and of course, the leaders deny it.

No careful student can fail to conclude that political ownership has always failed to give either the quality of service, or the low cost, of well managed corporations. Many political ownership schemes have well-nigh bankrupted the unfortunate communities that have attempted such entering wedges of communism.

Municipal political ownership agitation is always with us, but seems to be losing ground. In the whole United States out of upwards of 2,300 municipal electric enterprises that have been attempted at one time or another, about one-third have gone out of existence, or have become customers of utility companies. Of those municipal enterprises that remain, only a handful are regarded as successful—even by enthusiasts—and this handful must depend mainly either upon concealed drafts on the taxpayers, or upon constantly greater and greater construction expansions to conceal their real situations.

Tax-exempt securities furnish one of several means through which municipal enterprises shift their costs upon taxpayers without the taxpayers' knowledge. Tax-exempt securities have been condemned by Republican and Democratic secretaries of the treasury, and by the President of the United States. The evil is multiplying. Tax-exempt securities accomplish three things. They afford a refuge whereby rich men need not pay income taxes. They hamper industry and promote stagnation and decay. They encourage political extravagances and conceal from the public the real cost of those extravagances—for which the public must pay.

Progress in Public Relations

We cannot emphasize too much the importance of all of our members making real friends of all of their customers and of the general public. Good will is one of the most definite assets which any business may acquire; it may be defined as the measure of spiritual factor in business operation. The physical assets of a utility corporation may be of fabulous value and make a handsome showing in an annual report to shareholders, but the value of that intangible asset, the confidence and good will of the man in the street, may be, after all, the one great element which produces earning power and gives stability to the property.

Public relations is the sum of individual relations, not the result of an aggregation on the one hand dealing with a group on the other, but a man to man affair. The points of personal contact in an electric utility company's organization are numerous and important. Each individual man in any organization either adds strength to it, or weakens the structure, depending upon his attitude toward others. All employees should be alike in seeing that the consumer receives the considerate, careful, attentive, courteous treatment to which he is entitled. Under modern public policy a utility company concedes to its consumers and to the public every request that is reasonable, with the result that the public in the main, abstains from making unreasonable requests. Our relations with the public are now on a better footing than ever before. We shall not stop short of complete mutual understanding.

Report of Other Committees

In reporting for the Technical Section, H. L. Doolittle of the Southern California Edison Company, as chairman of the section, recommended that in the future but two section meetings be held each year, making, with the annual convention, three technical gatherings. He suggested that future committees choose fewer subjects for study during the year and emphasized the importance of larger attendance at the committee meetings, if members are to receive full benefit from the work.

Among the outstanding accomplishments of the Commercial Section during the year just closed, according to A. E. Holloway, San Diego Consolidated Gas & Electric Company, chairman of the section, were the electric vehicle school held in San Francisco last fall and the plans which have been perfected for the holding of lighting schools during the fall of 1924. He commented upon the success of the bureau plan of organization which was adopted for the first time by the section last year.

A. B. Carpenter of the San Joaquin Light & Power Corporation, chairman of the Accounting Committee, called attention to the importance of early consideration by the member companies of the

association, to the allocation of earnings and expenses to projects operating under federal license. He also recommended that the new committee consider commercial department expense during the coming year.

The necessity for salvaging obsolete equipment was brought out by C. A. Kelley, Southern Sierras Power Company, chairman of the Purchasing and Stores Committee, in his report. He stated that his committee had considered the necessity for a supply department budget and would discuss that subject during its sessions. He recommended that the sub-committee on automotive and labor-saving devices, which did excellent work during the year just closed, be organized into a separate committee or section.

Reports on the activities of the Insurance Committee and the Personnel Committee, both of which are new, were presented by R. J. Cantrell, Pacific Gas and Electric Company, and S. C. Haver, Southern California Edison Company, the respective chairmen. Al C. Joy, San Joaquin Light & Power Corporation, reported for the Publicity Committee.

Commercial Section Meetings

A. E. Holloway, superintendent of the commercial department of the San Diego Consolidated Gas & Electric Company and chairman of the Commercial Section, presided over the meetings of that section. Reports of the various bureaus and sub-committees were delivered under the direction of the individual sub-chairmen who conducted that part of the meetings with which their committees were most intimately concerned. The papers and reports having been read before the meeting, the entire time was available for discussion. This arrangement resulted in an exchange of views and in statements of conditions in various territories.

Lighting Bureaus' Meetings

In connection with the reports of the various lighting committees there was brought out the necessity for more and better illumination. Ensuing discussion showed that the increased load possibilities offered by the study of consumers' illumination problems and the installation of adequate lighting, together with the greater satisfaction that comes from a better installation, make it well worth while for utilities to devote attention to this branch of their service.

A discussion of the various types of signs and of the necessary operating procedure in connection with the use of electric signs, such as keeping the lamps clean, providing a ladder, steps or runway on large signs in order to facilitate relamping, was productive of many original ideas. The sale of signs adapted to the premises was also discussed at some length.

It was brought out, in the discussion of commercial lighting, that many merchants had increased their business appreciably by the installation of modern lighting. The opinion was expressed that the superior appearance of a well lighted store and the greater ease with which goods can be observed and examined by prospective purchasers soon pay for the cost of making the change in illumination layout.

Improved residence lighting was advocated for making the home a place of greater cheer and comfort. It was thought that insufficient attention had been paid to the lighting of homes and that in many cases fixtures had been installed that were totally inadequate or were not in harmony with the surroundings. This is considered to be due in part to the fact that many manufacturers are putting out so-called "package" fixtures that are often made to be sold at a low price without regard to quality or adaptability. These fixtures are often installed by individuals without regular places of business; being sold from a catalog and at a price inconsistent with quality or good merchandising. This matter has reached such proportions that it is receiving the attention of the National Association of Fixture Dealers and it was stated that a strong effort is doubtless to be made to influence manufacturers to either discontinue this type of fixture or to market only such goods as will be suitable for general domestic installations.

Considerable discussion of the "Davidson Plan" was held and it was the practically unanimous opinion that the lighting bureau should lend its hearty support to the idea. A plan for holding illumination schools at three different points in California was discussed and the proposed course of study was outlined in detail.

Appliance Bureau Meetings

The Appliance Sales Committee, under the direction of H. C. Goldrick, Western Electric Company, felt that steps should be taken to better inform sales employees of the characteristics of electric appliances in order that more satisfactory sales might be made and that the devices might be more intelligently sold.

The paper on commercial and domestic heating, by G. L. Stannard, Scheeline Manufacturing Company, was passed on motion of A. J. Kercher, consulting engineer, who also moved that the definition of indirect heaters be changed as follows:

Radiator is a term which is connected with appliances for steam and hot water heating and should be applied to heaters of similar appearance.

This committee passed two resolutions, one to the Executive Committee on the matter of the routine to be followed in the preparation and presentation of convention papers, and the other on the matter of wiring requirements for electric range and water and air heater installations. The feeling was that the present regulations are generally too severe, requiring much greater conductor capacity in the main and sub-feeds than the operating characteristics of the load demanded. This results in excessively high installation costs and often tends to retard the sale of electric ranges, water and air heaters. There was active discussion of the paper on electric ranges and water heating, the matter of automatic water heaters receiving special attention.

The discussions of the Commercial Section meetings indicated a need for better merchandising policies for central stations and closer cooperation and co-ordination between all of the various merchandising agencies in order that central stations might reap

the benefit of the maximum possible appliance saturation. It was also made very clear that there is a necessity for some system of properly training retail sales forces and the further consideration of this feature was recommended to the incoming appliance bureau.

Technical Section Meetings

The various sub-committees of the Technical Section spent a very active and profitable year as indicated by reports presented at the convention. The work of the Hydraulic Power Committee in compiling data and information regarding control and outlet works for dams and diversion structures was particularly noteworthy. The report of this committee comprises the major portion of the report of the national committee. Discussion of this report brought out the necessity for the study of settling basins and sand boxes and it was recommended that next year's committee undertake this work. It was also pointed out that all water hammer theories are not applicable to many of the penstocks used in Western hydro practice. These theories assume that penstocks are the same uniform diameter throughout, whereas in the West, it is not uncommon to find penstocks with varying diameters.

In the discussion following the presentation of a paper on "Electrically Controlled Valves" as applied to penstocks by George Bragg, Pacific Gas and Electric Company, J. E. Woodbridge of San Francisco stated that he did not think it advisable to incorporate too many automatic features in connection with the operation of valves because of the complications introduced. H. L. Doolittle, Southern California Edison Company, chairman of the section, stated that in his opinion automatic operation of valves at the head of penstocks should be applied to closing only, so as to avoid the possibility of accident.

Apparatus Bureau Meeting

Three major subjects received the attention of the Apparatus Bureau under Chairman E. R. Stauffacher, Southern California Edison Company, during the past year. Studies of transformer cooling systems, reclosing switches and transformer polarity were made. A valuable paper on the subject of transformer cooling was presented by R. M. Peabody, Southern California Edison Company. In this paper Mr. Peabody described experiments made on the system of his company, using automobile radiators for oil circulation to increase the rating of self-cooled transformers by employing forced draft over a greater radiation surface. Results of this test installation indicate a field of application which should receive further study by operating companies and manufacturers.

In a paper on "Reclosing Switches and Their Operation" J. H. Cunningham, General Electric Company, Los Angeles, described the three general systems now in use. One method closes the switch three times in rapid succession with no time interval. Another scheme employs either alternating or direct current and recloses the switch three times at predetermined intervals. A third method is a periodic

selective system for the gang operation of circuit breakers which permits the closing of one switch at a time to prevent drain on the closing circuit and overload on the station. Direct current only may be used in this system. John Koontz, Great Western Power Company, pointed out the necessity for employing circuit breakers of higher rating to avoid trouble when applied to automatic reclosing systems because of the heavier operating duty cycle.

Although the question of transformer polarity received much consideration during the past year, operating companies are not in entire agreement on this subject and it was recommended that the question be definitely settled by the Apparatus Bureau during the coming year. Chairman Stauffacher recommended that a detailed study of grounding systems be made by the new committee.

"Supervisory Control of System Operation" was the subject of a paper by A. W. Copley and P. B. Garrett, Westinghouse Electric & Manufacturing Company. The authors described what may now be done in the remote operation of substations through the system of supervisory control from a central load dispatching office. Part of the paper consisted of a practical demonstration of some of the supervisory control equipment, consisting of a five-section substation panel with the corresponding control board for the dispatching office.

Overhead Systems Bureau Meeting

One of the important subjects investigated by the Overhead Systems Bureau was the use of steel poles as a substitute for cedar poles. Tests conducted by the committee in the yards of the Pacific Coast Steel Company provided much valuable data for further study of this problem. It is felt that the principal use for steel poles will be in transmission and trunk feeder lines rather than in distribution service. With the present cost of wood poles steel seems uneconomical for short spans, and furthermore the important problem of being able to work circuits hot on steel poles has not been solved. Estimating the cost of the steel pole at about twice that of the wood pole span lengths double those now employed for wood pole construction would be necessary. Span lengths of over 400 ft. must be used if real economy is to result. One of the serious problems facing the utilities, in the southern part of California in particular, is the fortifying of wood poles against the attacks of termites, a wood-boring insect. In an effort to solve this problem, the Southern California Edison Company will erect 1,000 Douglas fir poles, the entire pole being treated by the empty cell, pressure creosoting process.

A paper by J. P. Jollyman, Pacific Gas and Electric Company, on "220-kv. Line Operation" showed that only a few minor cases of trouble have been reported during the eight months the Pit River line of his company has been in operation. Some of these were entirely mechanical. All 220-kv. equipment has functioned satisfactorily, Mr. Jollyman stated. Relay operation has been highly satisfactory. In the opinion of Mr. Jollyman all of the problems in connection with 220-kv. transmission have not been solved, and



Convention delegates and visitors in attendance at the annual convention

difficulties may be expected. He anticipates no trouble in the solution of such problems as might arise. Before the Pit River line was placed in operation exhaustive corona tests were made, which have thrown considerable light on the corona question and indicate results at variance with the present established laws and theory. A complete report on these tests is to be presented at the Pasadena convention of the American Institute of Electrical Engineers in October. In discussing this paper, H. A. Barre, Southern California Edison Company, said that no trouble of a serious nature has been experienced with the 270-mile Big Creek lines which have been operating at 220 kv. for more than a year. In designing a third Big Creek line to operate at this voltage he stated that the company plans to use a larger conductor with less tension than the recently completed 30-mile Laguna Bell extension. Experience has indicated that some changes in line hardware and the method of dead-ending are advisable.

An interesting paper was presented by E. H. Peabody, New York, in which he described a new type of mechanical oil burner which permits about the same flexibility as with the old steam burner. The author questioned the advisability of using such large furnace volumes as is now considered good practice.

Publicity Section Meetings

In a resolution declaring that its work is as important as that of any other part of the association, the Publicity Committee offered to the Executive Committee a new plan of organization following out

the bureau plan adopted by the other sections. This was the first convention at which a definite part of the program was given over to the discussion of problems of the news and advertising departments of the member companies. Keen interest was shown in the papers presented by members of the committee and in the discussions which followed.

Included among the papers read was one on "Newspaper Advertising and Its Relation to News Publicity" by Frederick S. Myrtle, editor-in-chief of "Pacific Service Magazine," Pacific Gas and Electric Company. A companion paper, "Planting the News Story" by Charles Heston Pierson, supervisor of information, Southern California Edison Company, outlined the methods followed by that company in distributing news matter to the 178 papers in its territory and the means employed in checking its publication. Richard E. Smith, advertising manager, Southern California Edison Company, presented a paper on "Keeping in Touch with the Stockholder" which emphasized the necessity for keeping security holders advised of the operations of the company. "The Place of the Trade Paper in the Industry" was the subject of a paper read by George C. Tenney, managing editor, *Journal of Electricity*.

The new plan of organization of the section as outlined by M. W. Scanlon, Westinghouse Electric & Manufacturing Company, San Francisco, calls for the formation of a number of bureaus charged with the study of various problems of the news and advertising departments. Included among these are the Bureau of Information, which will act as a central clearing house for information regarding the indus-



Pacific Coast Electrical Association, Coronado, Calif., June 16-20, 1924.

try, the Better Business Bureau, and the Bureau of Technique. The Publicity Committee will be known in the future as the News and Advertising Section.

Purchasing and Stores, Personnel, and Accounting Sections Meetings

Meetings of the purchasing and stores, personnel and accounting sections were productive of active discussion and brought many constructive thoughts.

The meeting of the Personnel Section was well attended by members of personnel departments of various companies and by those utility presidents who were in attendance at the convention. A paper was presented by E. G. McCann, Pacific Gas and Electric Company, and was followed by lengthy discussion of personnel matters. It was the consensus of opinion that personnel departments must continue to function largely in an advisory capacity, lending their assistance wherever it may be desired or required. It was also felt that such departments must establish in the minds of department heads the value of personnel effort to the company.

Women's Public Relations Meeting

For the first time in the history of the association, the women who attended the convention were given a definite place on the program when a meeting devoted to them was held Wednesday, June 18. More than 50 women attended and displayed a keen interest in the affairs of the association and in the workings of the electrical industry. Miss J. Frances Emans of the Southern California Edison Company,

chairman of the Women's Public Information Committee of the association, presided. Speaking about friendliness, she declared it a factor for success in the electrical industry as well as in any other business or profession. She introduced R. E. Smith of the Southern California Edison Company, who spoke on "The Smiles Club," to which every member of the electrical industry is supposed to belong. The club, organized six months ago, already has more than 30,000 men and women on its membership list, he said; its first purpose is tangible application of that intangible thing called courtesy; the initiation fee is a willingness to smile; maintenance of a cheerful disposition in all business associations pays the dues; and its philosophy is the age-old one that a smile can accomplish far more than a frown.

"Selling the Electric Idea" was the subject of a talk by Mrs. Helen Grahame. "Our present day civilization couldn't exist without the electrical industry," she said. "Electrifying your home and spreading your enthusiasm about the results is the best way to 'sell the electric idea.'"

Mrs. Grahame explained that most of the women present are in the electrical industry "by marriage."

George C. Tenney, managing editor of the Journal of Electricity, with that thought in mind, addressed his audience on "What the Women of the Electrical Industry Can Do to Improve Public Relations," and declared that the best thing a woman can do is to learn something about her husband's business.

In the discussion which followed the formal program, Mrs. W. L. Frost outlined a plan whereby the

women of the industry can do much in combating the California Water and Power Act.

Public Relations Section Meeting

The high spot of the entire convention was the meeting of the Public Relations Section held on Thursday, June 19, and presided over by R. E. Fisher, vice-president in charge of public relations and sales, Pacific Gas and Electric Company. At this meeting, which was an innovation as far as the Pacific Coast Electrical Association is concerned, R. E. Smith, advertising manager, Southern California Edison Company, presented a paper on "Common Sense in Public Relations," in which he declared that the real basis of public relations is in getting along with the public as individuals rather than as a mass.

He stated that the antipathy of the public toward utilities is due to the fact that it feels something is going on inside of these organizations which it cannot understand. When the searchlight of understanding is turned on, these misgivings disappear. When individual good will has been attained, group antipathy will disappear. The industry must be made so courteous and considerate, he said, that the public will believe that fact without being forced to read it in advertisements.

In his opinion there is a definite objection to the widely used slogan, "Educate the Public." Rather should the industry "educate the employee and inform the public" was his suggestion. He believed that the public resents being educated but is glad to be informed.

Mr. Smith's paper differed from the ordinary discussion on this subject in that not only did he point out the weaknesses in the industry's present public relations structure but he made definite and concrete suggestions as to how a better public attitude toward utilities might be created.

In commenting upon this paper, M. H. Aylesworth, managing director of the N.E.L.A., complimented Mr. Smith upon the paper and stated that he believed that it struck at the root of the question.

Miss J. Frances Emans, Southern California Edison Company, chairman of the Women's Public Information Committee, in reporting the work of her committee for the year, stated that a great deal more could have been accomplished if a better representation from the member companies had been present at the meetings. She so impressed the audience with the important character of the work of this committee that Al C. Joy, in behalf of the San Joaquin Light & Power Corporation, promised the fullest cooperation of his organization in the future.

The success of the "Smiles Club" was outlined in a report presented by R. A. Balzari, Westinghouse Electric & Manufacturing Company, San Francisco, who stated that over 30,000 members are now enrolled in the Courteous Service Club of the P.C.E.A. In the discussion which followed, it was pointed out that courtesy prompted by a sincere desire to please is the goal for which the industry must strive, and the movement in order to be lasting and efficacious must go deeper than an artificial smile and superficial courtesy. The "Smiles" movement was carried on

largely through the agency of the various electric clubs of the state and the San Diego and Sacramento clubs were presented with handsome engraved gavels for having gone over 100 per cent in their efforts to secure members. Delegates from every electric club in the state answered to the roll call of Chairman R. E. Fisher. This is the first time that the electric clubs have actually participated in the activities of the association.

Second Business Meeting

Extending a unanimous invitation to the National Electric Light Association to hold its 1925 convention in San Francisco, the Pacific Coast Electrical Association at its second business meeting, Friday morning, addressed a resolution to the executive committee of the national organization outlining the advantages of that city as a convention center. With Franklin T. Griffith, president of the Portland Electric Power Company, as president, the Pacific Coast is certain of having the national gathering next year. The final choice will undoubtedly rest between San Francisco and Portland, Ore. In 1912 the convention was held in Seattle. In the resolution addressed to the national body, the Pacific Coast Electrical Association guarantees a registration of 2,000 from the Pacific Coast states.

The feature of this meeting was an address by M. H. Aylesworth, managing director of the N.E.L.A. Mr. Aylesworth spoke on "The Case Against Political Ownership," and bitterly assailed the misinformed proponents of government ownership for their socialistic proposals. He pointed out that while the Public Ownership League of America in its literature advocates a government-owned superpower system consisting of all municipally operated electric plants, such a system would represent but 4 per cent of the total generating output of the nation. He quoted from many of the most outstanding men in public affairs showing that they, to a man, do not favor the further participation of the government in the industrial life of the nation.

In commenting upon the public conception of superpower he showed how socialistic and political propagandists have taken advantage of this term in furthering their own ends by creating in the minds of the public a wrong impression of what the term means. He urged that utilities take immediate steps to correct this misconception. Electricity has been a boon to the farmer and is revolutionizing agriculture, he stated. He cited the strides which the "electrify" movement has made in the rural districts of California.

Private industry is ready to develop the Colorado River for the best interests of the nation, Mr. Aylesworth declared. He quoted from a report of the Federal Power Commission denouncing the plan for government construction of this project. He also quoted from a recent address by Secretary of Commerce Herbert C. Hoover before the National Electric Light Association in which Secretary Hoover, himself an engineer, congratulated the electrical industry upon the remarkable strides it has made and paid a high tribute to the genius and enter-

CONVENTION CELEBRITIES



H.F. DOOLITTLE



F.A. LEACH, JR.



S.H. TAYLOR



L.M. KLAUBER



S.E. GATES



LEFT TO RIGHT — W.L. FROST, GEO. HUGHES, M.H. AYLESWORTH, J. B. BLACK, C.T. HUTCHINSON, P.H. BOOTH



J.H. POLLARD



D. C. PENCE



P.M. DOWNING



R.E. SMITH



A.E. HOLLOWAY



W.A. BAURHYTE

prise which have made the record of this industry possible. In his talk, Secretary Hoover declared that power development is not a function of the government but a task for private enterprise under state and federal regulation.

Mr. Aylesworth quoted one of the planks in the present Republican platform in which this party took a decided stand on the ownership of public utilities. The platform says:

"American industry should not be compelled to struggle against government competition. The right of the government to regulate, supervise and control public utilities and public interests, we believe should be strengthened, but we are firmly opposed to the nationalization or government ownership of public utilities. . . ."

In conclusion, Mr. Aylesworth said:

The entire nation views with great interest the battle for socialism in California. It has been stated time and time again that the attempt to place the state in industry and business is to be brought to an issue in the State of California, and it is well understood that this movement is similar to that which took place in North Dakota and which has practically wrecked that state.

The thinking men and women of this country have confidence in the sober judgment of the people of California, and believe that the proposed bond issue which would place a tax burden on the people of California in excess of any other state will be defeated by a greater vote than was cast at the last election.

May I take this opportunity to warn the industry that a continual program of honest information must be furnished to the people of this state, and that it is the duty of every man and woman engaged in the public utility industry of this state to inform the people of the dangerous doctrines of socialism that will be preached during the campaign which will soon be waged. It is your duty to make this fight in the interests of your state and your people. Do not hesitate to state your case, and you will eventually receive the thanks of a grateful people.

I know of no other state where the electrical industry has rendered greater service than it has in California. You have reason to be proud of your achievements and I am particularly grateful that your industry has that keen sense of appreciation of the opportunity to serve the public with the best service at your command at the lowest rates which will produce this service.

Public Service Conference

Emphasizing the necessity of closer cooperation between all public utilities, especially in considering their common problems and combating their common enemies, the Public Service Conference, Friday afternoon, was one of the outstanding features of the convention program. The feature address, "Public Service and Public Ownership," was delivered by Henry Swift Ives, secretary, Casualty Information Clearing House, Chicago. Mr. Ives clearly outlined the attack which is being made upon private industry of the nation by socialistic and political propagandists and urged that industry unite in meeting the attack. Mr. Ives said:

Government ownership of industry may be defined as the substitution of government deficits for private profits. It is taxation for confiscation. It is the first and last step in the socialistic seduction of democracy. It pretends to take away from those who have for the benefit of those who have not, but in reality it takes away from all to the injury of all. It is an attempt to subsidize mediocrity by penalizing genius, but actually the only effect of such a subsidy is to make mediocrity even more mediocre. It represses the reproductive processes of capital, and then tries to revive them by a tax gland operation. It is destructive of wealth growth and productive of debt growth. It makes politics instead of business the national dividend producer. It promotes waste and de-

notes saving. And its whole tendency leads directly to the ultimate absorption by the state of all private property rights. Government ownership spells the socialist millennium if carried out to its logical conclusion.

Such is the indictment of experience. The conspicuous government failures in the world have been in public ownership. But despite this record, which reads like a list of bank suspensions in a bank guarantee state, there has developed in this country a very healthy agitation for the adoption of a system here which hasn't worked anywhere else.

Industry and Government Cannot Merge

We are violently opposed in this country to permitting industry to run the government, but unfortunately there are many who actually favor government operation of industry. Both of these ideas of sovereignty are as old as the hills and as sterile as the desert. Each contemplates an autocracy. When industry tries to dictate to the state and when the state invades the legitimate sphere of privately conducted enterprise both are sowing the seeds of their own destruction. Too much business in government is almost as bad as too much government in business. The American people have had a brief taste of industrial domination, and now they are getting more than a taste of political domination of industry. It was easy to swing the pendulum back from the former situation to a dead center, but it is not so easy to stop the opposite swing towards complete socialization.

Political government is not adapted to industrial government, and industrial government is not suited for political government. These are two separate fields, and should be kept as far apart as possible. They may overlap in places, but under a democracy they never can merge without at the same time destroying democracy. There is little of economy and efficiency from a strictly business viewpoint in the administration of a democratic state. The same condition would be true in any industry if all those engaged in it were permitted an equal voice in its affairs. If our American kind of government was conducted with the same degree of expertness as some of our largest business corporations it would not long continue a democracy. And if American business was operated with the same degree of lassitude and incompetency as governmental affairs are generally it would go into bankruptcy before the taking of another inventory. Successful industrial development requires centralized authority of a kind which if exercised in a democracy would rapidly transmute it into an autocracy. In a word, we cannot have democracy and highly efficient and centralized political authority at the same time to any greater extent than we are able to conduct our business affairs without exactly the same kind of authority. The world war taught us that.

The socialists and radicals are keenly aware of the fact that democracy and capitalism are in reality twin institutions. In America today it will be found that those opposed to a continuation of our democratic form of government are not directing their thrusts nearly so much at our basic political concepts as they are at our industrial and economic institutions, well knowing that if they first destroy the latter the former automatically will become part and parcel of the wreckage. It is much easier and simpler to get a popular hearing for a denunciation of profits, for example, than it is for a fulmination against liberty; the demagogue finds that he can more advantageously excoriate the system which permits capital to grow and reproduce itself for the benefit of all the people than it is to inveigh against the principles of popular sovereignty.

Mr. Ives stated that the radicals were not solely responsible for the spread of public ownership propositions. It is his opinion that many large property owners and business men who are ardent capitalists in regard to their own property or business, are inclined to be just as ardent socialists when the other man's property is concerned. These men, Mr. Ives stated, do by their actions support the cause of socialism, forgetting that "no single industry or business can be lifted out of the common mass of privately conducted enterprise, endowed with the attributes of sovereignty, subsidized by taxation and operated by a political bureaucracy without every other business and industry feeling the depressing effect of such a procedure." In urging that all business men be zealous in combating public ownership

of their own industries and those of other industrial enterprises Mr. Ives continued:

To promote the right kind of cooperation among the property owners of the country in their fight against socialization I have heretofore suggested the organization of a "Private Ownership League." I see no reason to change my opinion as to the feasibility of such a move. The socialists have a "Public Ownership League," which is a heavily subsidized going concern, and unfortunately has among its membership many business men and property owners who have been lured by its fake altruistic appeals, or who have been misled by prejudices or biased by selfishness. Why, indeed, should not the property-owning classes, representing a large majority of the people of this country and nearly all of its wealth, have a league to safeguard their interest against malicious and insinuating socialist propaganda? If something like this is not done the public ownership movement may well get beyond all control.

You who are engaged in the electrical utility business are well aware of the continuing danger to that business from the government ownership agitation. You have been fighting it for years, in season and out of season, and just when the craze for municipal operation seems to have run its course, you are confronted with a new and greater menace in the proposal to socialize the superpower plan of tying electric systems together all over the country. You raised this giant, you trained him, you supplied his brains, you dedicated his services to human industry and the upbuilding of the nation. All you are asking in compensation for this is a fair return on the money you are spending and expect to spend to bring about the fullest and most economical utilization of the power resources of the nation for the benefit of all the people.

And now the state which has never lifted a finger to help you, which even has often hindered you, which has never contributed one dollar, one ounce of brains or one pound of initiative to this project, steps in and seeks to take control of it away from you and the 200,000 owners of your stocks and bonds. The very size of the superpower scheme has fascinated the demagogues and socialist leaders. They see either temporary spoils in the state control of this giant, or they see through this process a splendid opportunity to strike a heavy blow at the institution of private property, depending upon their personal interest and political viewpoint.

A similar suggestion was offered by C. P. Cutten, attorney, rate department, Pacific Gas and Electric Company, who addressed the meeting on "Public Service and Utility Cooperation." Taking for his theme the gathering which he was addressing, Mr. Cutten urged that the plan instituted at this convention be followed in the future with frequent conferences between representatives of all utilities, so that each might be familiar with the problems of the others and all might work in harmony.

Speaking on "Public Service and Competition," Ben S. Allen, public relations manager, Key System Transit Company, Oakland, stated that the only competition which is left for the utilities since they have been placed under the jurisdiction of regulatory bodies is the competition of rendering service. He de-

clared that the utility's greatest asset is public confidence and urged that every step be taken to secure this confidence. He stated that utilities in order to succeed, must sell to the public their honesty of intent and competency of personnel and equipment to take care of the service job which they have undertaken.

A. H. Griswold, vice-president and general manager, Southern California Telephone Company, Los Angeles, talked on "Public Service and Financing" and outlined the progress which utilities have made in customer and employee ownership. Successful financing, he declared, is dependent upon good service, proper internal relations, proper relations with other utilities and proper relations with the public.

The meeting was presided over by Frank A. Leach, Jr., in the absence of R. H. Ballard, the chairman.

Banquet

The convention closed with the banquet Friday evening. C. T. Hutchinson, McGraw-Hill Company of California, acted as toastmaster in the absence of A. Emory Wishon, general manager of the San Joaquin Light & Power Corporation. The two speakers were General G. H. Harries, vice-president of H. M. Byllesby Company and general manager of the San Diego Consolidated Gas & Electric Company, and Chester H. Rowell, former publisher of the Fresno "Republican" and former state railroad commissioner.

General Harries treated the convention in a humorous fashion and among other things suggested that a committee on standardization of golf be appointed. He also recommended that early morning sessions be called for the purpose of greeting Aurora. He advised convention delegates to appoint a song leader so that songs might be sung in "series rather than in parallel."

"All on One Switchboard" was the subject of Mr. Rowell's address. He described his recent trip around the world and commented to some extent upon the political and business situation in Europe. He was particularly hopeful for the Dawes plan. He declared that politics is the chief obstacle to business restoration in the critical nations of Europe.

Prizes won in the golf tournament were presented to the winners during the course of the banquet by Al C. Joy.

Electric Range Maintenance Costs

By A. H. Kreul

Assistant Superintendent Meters and Service,
Portland Electric Power Company, Portland, Ore.

THE use of the domestic electric range has increased materially in the past few years. The comfort and convenience that this type of cooking apparatus provides, the possibility of cooking without attention and the sales promotion work of the various electric utilities—in which they have told the truth about electric cookery—have all resulted in an increased

interest on the part of the housewife and in a sales volume that has in most instances exceeded expectations. In many cases range factories have been obliged to force production and there have been long delays in filling orders. It has been a not unusual experience for a power company to add to its lines more electric ranges in a single year than were connected to the system at the beginning of that

year or at the start of a sales campaign. This condition has been particularly true of Western central stations and many of these have made notable progress in the development of this class of load.

One of the most important factors in connection with the popularizing of the electric range has been found to be the matter of servicing. Various policies have been adopted by the different companies ranging all the way from full charge for labor and material for repairs to absolutely free maintenance with no charge for either labor or repair parts. It has been common practice to service free as to labor and repairs during the first year of service life of the range, the procedure being to charge back the parts cost during this period to the manufacturer and to absorb the labor charge. Of course, as is to be expected, the maintenance cost during the first year has been found in general to be the least of any year of apparatus service. This has led many companies to make no charge for labor at any time during the life of the device but to charge only for the material used, and this generally at company cost. Some companies, however, have adopted a policy, still in effect, of making no charge whatsoever for servicing ranges, the contention being that the electric range is still in the pioneer stage and that extra inducements are necessary to promote its popularity. The argument has also been advanced that the technicalities of construction of an electric range place it in a disadvantageous position as regards fuel ranges and that if a charge is made for keeping the range in working condition the electric range business must necessarily be retarded. Other companies have contended that the desirable characteristics of the range load make it an attractive type of business with low delivery cost and that for that reason the servicing costs could rightly be considered to be absorbed into the rate.

The Portland Electric Power Company, of Portland, Ore., some years ago adopted a policy of servicing ranges without cost to the consumer. This policy is still in effect and has been of considerable assistance over a five-year-period in the development of range sales and load. It has undoubtedly contributed largely to the improved public relations between the company and the consumer. During the year 1923, for example, the company added to its lines 1,466 new electric ranges, bringing the total to 3,081 ranges with a connected load of approximately 21,500 kw. When it is considered that this is largely off-peak load and that range revenue totals about \$47 per year per range, it will be seen that the sales effort involved in placing this equipment on the line has been productive of profitable returns.

In order to know accurately what it costs to maintain free service of electric ranges the company installed a detailed accounting system for the purpose. This system takes account of every item entering into the servicing of ranges, as may be seen from the accompanying tables. It was expected to show by this detailed accounting not only what service costs were but also what particular part or parts of a range most often needed repair. It was felt

that manufacturers would welcome this sort of information in order that they might strengthen weaknesses in their technical or mechanical construction and thereby place themselves in a favorable competitive position. It might be said here that manufacturers have always shown an eagerness to obtain results of service break-downs and have gladly given heed to the reports of the service department. As a result of these records, many changes have been made in range construction and many technical and physical weaknesses have been eliminated. From these service reports the central station has learned what equipment it can safely recommend to its consumers and has been able to guide purchasers in their selections.

The service cost system of this company shows in detail the cause of each service complaint and the total cost of the complaint as well as the cost of repair. Table I, for example, shows in detail the particular features of complaints during the period

TABLE I—CLASSIFICATION OF RANGE COMPLAINTS
July to December, inclusive, 1923.

Open Coils in Hot Plates	
440 watt	40
500 watt	107
667 watt	214
750 watt	9
1000 watt	106
1500 watt	24
Open Hot Plates Complete	
440 watt	31
1000 watt	199
1500 watt	59
2000 watt	0
Closed Hot Plates	
1000 watt	109
1500 watt	88
1200 watt	2
2000 watt	0
Open Elements	
500-watt coils	0
750-watt coils	6
Open wire	78
Sheath wire	16
Switches	
Repaired	127
Replaced	211
Oven Contact Plugs	
Repaired	60
Replaced	20
Top Contact Plugs	
Repaired	84
Replaced	60
Ovens Relined	
Relined	18
Repainted	3
Repaired	0
Thermometers	
Adjusted	77
Replaced	75
Contacts	26
Clocks	
Repaired	5
Replaced	57
Automatic Switches	
Repaired	66
Replaced	24
Wiring	
Shorts	19
Grounds	45
Opens	69
Loose connections	36
Reflectors replaced	44
Oven Doors repaired	65
New Ranges installed	667

from July, 1923, to January, 1924. This record is made up daily as the service repair slips are turned in by the repairmen and the list of material used furnishes the desired information for showing the cause of break-down. The report itemizes the cause of failure, as, for example, switches; oven lining;

thermometer; clock; automatic switch; coils; hot plate—both open and closed types—etc. This information has been of material value to the manufacturers as it has indicated directly the defects in their products and it has already been instrumental in many cases in bringing about improvements in different parts of various makes and models of equipment.

TABLE II—RANGE SERVICE COSTS FOR 1923

Ranges in service Jan. 1, 1923, 1,615
Ranges in service Jan. 1, 1924, 3,081
Average ranges in service, 1923, 2,348
Labor cost, 1923, \$5,600.12
Material cost, 1923, \$8,414.01
Cartage cost, 1923, \$1,545.21
Total cost, 1923, \$15,559.34
Labor cost per range, \$2.38
Material cost per range, \$3.59
Cartage cost per range, \$0.66
Total cost per range, \$6.63

There seems to be a large demand for automatically controlled ovens and there seems likewise to be room for a great deal of improvement in such devices now in use. Unless the automatic feature can be depended upon by the consumer to operate satisfactorily this demand is liable to be short lived on account of lack of confidence on the part of the buyer.

TABLE III—RANGE COMPLAINT COSTS—1923

Total complaints, 6,059
Average ranges in service, 2,348
Complaints per range, 2.5
Labor Cost, 1923, \$5,600.12
Material cost, 1923, \$8,414.01
Cartage cost, 1923, \$1,545.21
Total cost, 1923, \$15,559.34
Labor cost per complaint, \$0.92
Material cost per complaint, \$1.39
Cartage cost per complaint, \$0.26
Total cost per complaint, \$2.57

Table II is of particular interest to central stations as it shows at a glance the maintenance cost of ranges. Of particular note in this table is the cost of material used in making repairs. This cost amounts to about 54 per cent of the total maintenance charge and increases appreciably with the age of the range. No definite ratio of maintenance cost to age of equipment has yet been worked out, but the service cost has been found to increase heavily as the range becomes older in service. No charges are included in this table to cover the cost of material proving defective within the first year of service life, as these charges have been made back against the manufacturer and are not considered a part of the service cost of this central station. Labor costs amount, roughly, to about 33-1/3 per cent of the total and the balance is made up of minor items such as drayage, etc.

Table III is an analysis of range complaint costs. It will be noted that the average cost per complaint for the period under review is \$2.57. In view of the fact that the average number of ranges in service during the period of this report was 2,348, it will be seen that there was an average of slightly more than two and one-half complaint calls per range. This is

not a serious matter as the major portion of these calls were for matters having to do with the operation of the equipment and not with maintenance. It should be stated, however, that this expense is seldom realized by the consumer and almost never receives his consideration. This matter of free service is a salient sales point and can well be emphasized by the sales forces of those companies whose policies are formulated along that line.

The installation of a range forms an item of considerable expense. This expense, however, is absolutely necessary and there seems little possibility of reducing it by any appreciable amount. As shown in Table IV, it is composed of labor, cartage and material. Here again the labor cost is the major item in the total. This labor item contains not only the time of draymen but also includes the time of uncrating, setting up, burning off the elements and making the electrical connections to the house wiring. This company does not do the housewiring necessary for the range itself but does make the connection from the outlet box on the range to the wiring. This table does not show the cost of running outside loop or of setting meter, where new meter is required.

A comprehensive idea of the cost of servicing electric ranges over a period of years may be obtained from Table V which shows the average service cost for each of five consecutive years. The influence of the labor cost is well shown in this table for, during the years of the war, when labor exacted its own price, the average cost was much higher than either before or since that time.

TABLE IV—RANGE INSTALLATION COSTS—1923

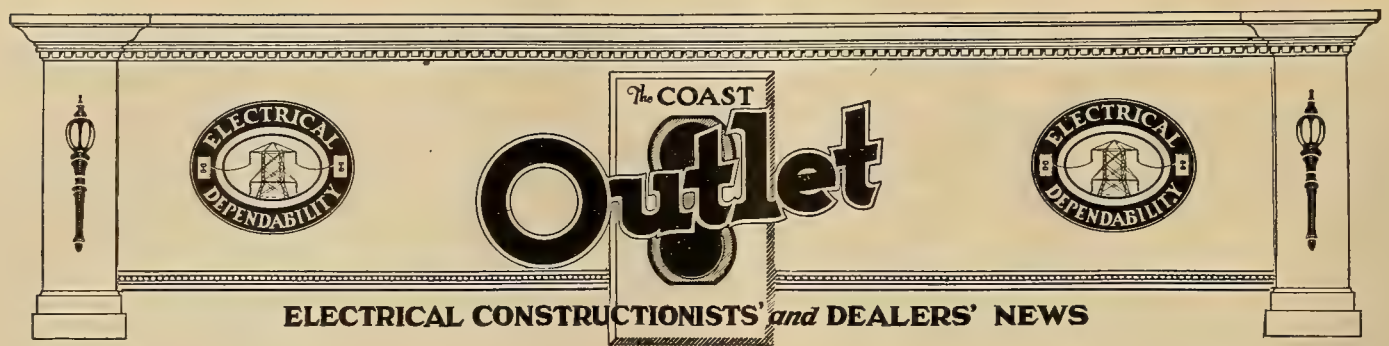
Total ranges installed, 1,361
Labor cost, \$10,257.02
Material cost, \$4,723.41
Cartage cost, \$1,481.24
Total cost, 1923, \$16,466.67
Labor cost per range, \$7.53
Material cost per range, \$3.47
Cartage cost per range, \$1.09
Total cost per range, \$12.09

The range organization of this company now consists of a foreman; three service men with automobiles fully equipped with a large stock of repair parts for all makes of range; two installers, with helpers, operating two trucks in delivering and setting up ranges; and two shop men who uncrate and burn off new ranges and repair old ranges that are to be put into service. During special range campaigns the deliveries frequently run as high as twelve per day and at such times an extra crew, with a third machine, is added to the regular force in order to meet the demand for immediate deliveries.

The demand for the electric range is increasing rapidly and, with the growth in population and the increase in new residences, apartments, flats, etc., it is apparent that this increase will be maintained for some time to come. This seems to be especially assured in those territories where the central station has adopted a liberal service policy.

TABLE V—RANGE SERVICE COSTS

Year	Ranges in Service Dec. 31	Average Ranges in Service	Number of Complaints	Complaints per Range	Labor Cost	Material Cost	Cartage Cost	Cost per Complaint	Total Cost per Range
1919	620	456	1,153	2.5	\$3.96	\$1.56	Included	\$2.18	\$5.52
1920	782	701	1,506	2.1	4.54	3.34	in material	3.67	7.88
1921	1,082	846	2,009	2.3	5.31	2.53	" "	3.30	7.84
1922	1,615	1,348	3,141	2.3	3.30	4.08	" "	3.17	7.38
1923	2,458	2,348	6,059	2.5	2.38	3.59	\$.66	2.57	6.63



Electrical Construction

By E. Earl Browne

THE three preceding articles have dealt with sample estimating forms, by the use of which the work of making up a bid on a job was greatly minimized. The principal steps in taking off the quantities of material and labor from a plan will be taken up now. Every person has his own ideas as to the procedure. In the final analysis, however, it is the accuracy of the methods employed and the carefulness of the estimator that count.

It is, in the writer's opinion, necessary first to read the specifications in order to pick out any spe-

of the May 1 issue of the Journal of Electricity, except that the fixtures have been added into the contract.

After all special and unusual things called for in the specifications have been carefully noted in their proper place on the estimating forms, it is good procedure, in order to become familiar with the plans, to count the outlets, switches, etc., directly from the plans. This is best done by aid of colored pencils or crayons, using one color for light and power outlets and another for telephone, bell and other signal

ARCH'T <i>W. F. Jones</i>		LOCATION <i>1 Mission St. 80' 8" 11' 8"</i>		SCALE <i>1/4"</i>		ESTIMATE NO. <i>486</i>																
OWNER <i>A. G. Smith</i>		BID TO <i>Architect</i>		DATE <i>7/1/24</i> HR. <i>12 M.</i>		BID PRICE \$		DATE <i>7/28/24</i>														
FLOOR	CEILING HEIGHT	<i>Fixtures x</i> OUTLET (WATTS)								SWITCHES					RECEPTACLES							
		40 W	60 W	100 W	200 W	100 C	300 C	300 C			S. P.	3 W	4 W	LOCK	DOOR		SINGLE CONV.	DUPLEX CONV.	20 AMP. CONV.	FLOOR	BOX	SIGN
BASEMENT		6	0	0	0	0	0	0			3			0			0					
1ST		2	4	0	0	0	0	14			5			2			1					
MEZZANINE		-	-	-	-	-	-	-			-	-		-			-					
2ND		2	1	5	5	5	5	0			17			0			2					
3RD		2	1	5	5	5	5	0			17			0			2					
4TH		2	1	5	5	5	5	0			17			0			2					
5TH		2	1	5	5	5	5	0			17			0			2					
<i>Roof 6th</i>		1	0	0	0	0	0	0			0			0			0					
7TH																						
8TH																						
9TH																						
TOTALS		17	8	20	20	20	20	14 = 119			76			2			9					

Fig. 8.

cial features called for therein that would not be shown on the plans. As an example, if fixtures are to be furnished and installed and the various types are specified, it would save considerable time if the outlets were counted up as fixtures of the various types and sizes and thereby save the time entailed in first counting up the outlets and then going over the plans again to pick off the fixtures. Figs. 8 and 9 show the same job as in Fig. 1 on page 324

outlets. A black pencil should not be used as the mark on blue prints is harder to see and is more difficult to erase.

After this is done, if the job has not been laid out by a competent engineer, the next step is to rough out the circuit runs with crayons. This then gives an opportunity to check accurately the pipe entrances into outlets, if the estimating system of the Association of Electragists is used. If this sys-

tem is not used, this step is not necessary. The next step is to measure off the various sizes on circuit conduits and tabulate them in some manner as shown in Fig. 2, page 325, *Journal of Electricity* for May 1, 1924, and Fig. 4, page 363, *Journal of Electricity* for May 15, 1924. This is one point in the work

opinion it is better to follow the 1-in. conduit with four circuits from the panel board to its conclusion in reference to the four circuits and write down its length. Then take the 1-in. conduit with three circuits through from its length and so on with the $\frac{3}{4}$ -in. conduit with two circuits; $\frac{1}{2}$ -in. with two cir-

MATERIAL LABOR-SUMMARY							
QUANTITY	MATERIAL			MATERIAL UNIT	EXTENSION	LABOR UNIT	EXTENSION
119- 76-	Ceiling and Bracket Outlets, Complete						
	S. P. Push Switches, Complete						
	3-W	"	"	"			
	4-W	"	"	"			
2-	Lock	"	"	"			
9-	Convenience Outlets, Complete { Single Duplex 20 Amp. }						
2300-	Floor	"	"	"			
	1/2-in. Conduit, (Galv. or Black)	2	# 14	Wires			
	1/2-in.	"	"	"	3	# 14	"
	1/2-in.	"	"	"	4	# 14	"
	1/2-in.	"	"	"	2	# 12	"
	3/4-in.	"	"	"	4	# 14	"
260-	3/4-in.	"	"	"	3	# 12	"
	3/4-in.	"	"	"	2	# 10	"
110-	3/4-in.	"	"	"	3	# 10	"
	3/4-in.	"	"	"	2	# 8	"
	1 -in.	"	"	"	6	# 14	"
	1 -in.	"	"	"	8	# 14	"
	1 -in.	"	"	"	3	# 8	"
	1 -in.	"	"	"	2	# 6	"
	1 1/4-in.	"	"	"	3	# 6	"
	1 1/4-in.	"	"	"	2	# 4	"
	1 1/4-in.	"	"	"	3	# 4	"
	1 1/4-in.	"	"	"	3	# 3	"
	1 1/4-in.	"	"	"	2	# 2	"
	1 1/2-in.	"	"	"	3	# 2	"
40-	1 1/2-in.	"	"	"	3	# 1	"
	2 -in.	"	"	"	3	# 0	"
	2 -in.	"	"	"	3	# 2/0	"
	2 -in.	"	"	"	3	# 3/0	"
	2 1/2-in.	"	"	"	3	# 4/0	"
2-	Panel Boards, Complete (6) Circuits						
4-	"	"	"	(4)	"		
	"	"	"	()	"		
	"	"	"	()	"		
1-	Service Switch,	(100A)	(250V)	(3 P)			
	"	"	"	(A) (V) (P)			
	"	"	"	(A) (V) (P)			
6-	Sub Header	(30A)	(250V)	(3 P)			
	"	"	"	(A) (V) (P)			
	"	"	"	(A) (V) (P)			
	"	"	"	(A) (V) (P)			
	"	"	"	(A) (V) (P)			
	"	"	"	(A) (V) (P)			
	"	"	"	(A) (V) (P)			
	"	"	"	(A) (V) (P)			
	"	"	"	(A) (V) (P)			
17-	Type "A"	40 W.	fixtures				
8-	Type "B"	60 W.		✓	✓		
20-	Type "B"	100 W.		✓	✓		
20-	Type "C"	200 W.		✓	✓		
20-	Type "C"	100 W.		✓	✓		
20-	Type "C"	200 W.		✓	✓		
14-	Type "C"	300 W.		✓	✓		
325-	Incidentals						
	Inspection						
	Labor						

Fig. 9.

where a great many estimators make a mistake. They will take off all the 1/2 to 1-in. circuit from one floor and write it down as a total of that size for that floor and so on through the various sizes and combinations. This, to the writer, always seems an easy way to overlook some runs of conduit. In the writer's

cuits; 1/2-in. with one circuit. This may seem to involve more writing and tabulation than the other system, but greater accuracy will be obtained, and it has the added advantage that if one is interrupted it is not necessary to go over the floor plan a second time on returning to the work.

A Practical System of Accounting for Contractor and Dealer

By F. V. Mitchell

IN an accounting system it is possible to furnish as much departmental analysis of the business as the management desires, but the writer has found in his experience that the following departmental segregation affords the average electrical firm a sufficiently detailed analysis of its operations:

- 1—Wiring
- 2—Fixtures
- 3—Store

Department No. 1 includes all outside construction and repair work. Department No. 2 includes the sale and installation of all electrical fixtures. Department No. 3 includes all other store sales, principally electrical appliances, lamps and radio supplies. If the appliance or radio business is sufficiently large to warrant the appointment of an individual in charge, for instance, it will be found expedient to separate these from the other miscellaneous store sales and include the two additional departments in the segregation.

In the April 15, 1924, issue of the Journal of Electricity was presented a sample page of the Combined Cash Book-Journal for the small electrical store that did not require departmental segregation, and at that time attention was called to the fact that through the use of fly-leaves this book could be expanded to meet the requirements of just such department analysis as has been referred to above. In Fig. 1 is outlined how the entries would be made

for departmental sales and costs, and in Fig. 2 for departmental expenses.

As will be readily noted, the principle of entering transactions is identically the same as in the original form, the only difference being that each entry is distributed according to department in the proper columns provided for that purpose. Each item of expense should be allocated direct to a department whenever possible and when unable to do so, the amount that cannot be directly applied to a department should be entered in the General column under its proper caption of expense. The total amount in the General column of each expense account at the end of each month is distributed over the departments on the basis of sales, each department being charged with the same percentage (or ratio) of the unapplied amount that its sales bear to the total sales for the month.

The item of Rent should be distributed directly over the departments on the basis of actual floor space occupied, and once this measurement is determined it becomes a fixed departmental distribution each month until there is any material change in the amount of floor space occupied by the departments. The item of Fire Insurance on Stock should be distributed directly over the departments on the basis of physical inventory taken on the first of each calendar year and, unless there is actually known to be a material change in the amount of stock carried on hand in the departments at some time during

COMBINED CASH BOOK - JOURNAL						MONTH OF JUNE, 1924 -					
- BANK -		CHECKS DRAWN	DATE 1924 June	DESCRIPTION	CHECK NO.	ACCOUNTS RECEIVABLE		ACCOUNTS PAYABLE			
BALANCE	DEPOSITS					DR.	CR.	DR.	CR.		
1										1	
2		25.00	7	Sunday newspaper ad.	415					2	
3				Gasoline & oil					32.50	3	
4		180.00		Pay Roll - unskilled laborer	416					4	
5										5	
6										6	

Fig. 1.

COMBINED CASH BOOK - JOURNAL										MONTH OF JUNE, 1924									
- BANK -																			
BALANCE		DEPOSITS		CHKS. DRAWN		DATE		DESCRIPTION		CHK. NO.		ACCOUNTS RECEIVABLE		ACCOUNTS PAYABLE					
		DR		CR								DR		CR					
1						1924 June			Forwarded								1		
2						7			A. H. Brown - wiring job #20			86 250					2		
3									J. R. Smith - fixtures job #25			471 50					3		
4									Total Store Sales			262 45					4		
5																	5		
6																	6		

Fig. 2.

the year, this ratio so determined on the first of the calendar year is used for departmental distribution each month throughout that year. The last two items are the only exceptions to the rule of the distribution on the basis of sales, of expenses not incurred specifically for a department. As it is a proven fact in business that sales create overhead, there can be no fairer method of distribution used than this in which the departments having the larger amount of sales are charged with the larger percentage of the general overhead, or unapplied expense.

Sales Account				
		CREDIT		
		Debit	Balance	Page
1944				
1	Jan 30	Total Month's Sales	5 750.00	2750.00
32			400.00	1000.00
33				
34				

Fig. 3.

The Sales Account in the General Ledger, as outlined in Fig. 3, contains an illustration of the monthly entries for departmental sales, the Cost of Goods Sold Account in Fig. 4 for departmental costs,

Cost of Goods Sold							
		DEBIT					
		TOTAL	WAGES	EXPENSE	LOSS		
1	Jan 30	Total March Cost	6	4675.00	2500.00	1250.00	
2							
3							
4							

Fig. 4.

and Advertising and Auto Expense Accounts in Figs. 5 and 6, respectively, for departmental expenses. It will be noted how the amounts that would appear as totals of the General columns of these two expense captions in the Combined Cash Book-Journal are distributed over the departments on the basis of sales.

It will also be noted in Fig. 1 that the amount debited to Costs is credited direct to Merchandise and Labor Accounts, and that under this method there is no attempt made to apportion the overhead to each wiring or fixture job. There is no Work in Process Account used under this method, and the amount of material and labor on jobs in process and unbilled at the end of each calendar year should be included in the value of the physical inventory taken to prepare an accurate Profit and Loss Statement. Under this plan the bill for roughing-in charge

ADVERTISING							
1914				REVENUE			
				TOTAL	MAKING	FINISHED	TIME
1	June 10	Total done	6	65.00	75.00	23.75	21.75
2	30	done	6	75.00	100.00	26.00	28.75
3							
4							

Fig. 5.

should be entered in the Combined Cash Book-Journal, with the cost of the job up to that point, at the time this bill is rendered for collection purposes, and when the job is completed, the bill for the

Auto Expense				
Date				
		Travel	Wants	Other
June 30	Total Current	11.00	1.00	2.00
30	General	10.00	2.00	1.00

Fig. 6.

finish should be entered, with the cost of that portion of the work. At the time the roughing-in charge is posted, a notation should be made upon the customer's account of the amount of the balance (or finish) of the contract to be billed upon its completion.

GENERAL M-1				GENERAL M-2				GENERAL M-3				GENERAL M-4			
WIRING		FIXTURES		STORE		MISC - WIRING		MISC - FIXTURES		MISC - STORE		LABOR			
SALES	COSTS	SALES	COSTS	SALES	COSTS	DR.	CR.	DR.	CR.	DR.	CR.	DR.	CR.		
86250	17500						28335						19165		
		47150	23575						17680				5895		
				26245	15440						18440				

Fig. 1.

FLYER No 1				FLYER No 2				FLYER No 3			
ADVERTISING				Auto EXPENSE				SALARIES			
WIRING	FIXTURES	STORE	GENERAL	WIRING	FIXTURES	STORE	GENERAL	WIRING	FIXTURES	STORE	GENERAL
2X	2X	2X	2X	2X	2X	2X	2X	2X	2X	2X	2X
700	600	800	400	1250	750	100	750	5000	3000	2500	7500

Fig. 2.

Standard Symbols for Plans Are Prepared by Electragists

Many different symbols have been used in the past for indicating the same device or outlet on plans, drawings and blue prints. This has often resulted in confusion and has always made it difficult to figure plans as it has been necessary to ascertain what was meant by any given set of symbols. This matter of a common style of marking plans has received attention from many sources, including contractors' associations, architects, and others.

The Association of Electragists, International, the American Institute of Architects, and the American Institute of Electrical Engineers have recommended and adopted and the American Engineering Standards Committee has approved the symbols reproduced herewith. This scheme of indicating electrical installations was worked out by the Association of Electragists, International, after some years of consideration of the matter and after several different plans had been reviewed. It is hoped that by a uniform application of these symbols the labor of estimating may be lightened and that the possibility of misunderstanding may be eliminated.

The California State Association of Electrical Contractors and Dealers has prepared a sheet showing all of the approved symbols and has distributed these sheets to architects, engineers, contractors, builders and others in order to promote a common use and understanding of the markings.

New Radio Shop Is Established at Sacramento, Calif.

One of the recent radio shops to open in Sacramento, Calif., is the Radio Equipment Company at 1015—13th Street. The proprietor, Frank D. Bennett, will deal in radio goods exclusively. Mr. Bennett began his career in the electrical industry as an automobile electrician, after which he spent twelve years in radio work in the army signal corps. He then went with the Radio Manufacturing Company of Portland, Ore. For the past year and a half he has been manager of the radio department of the Weinstock-Lubin Company of Sacramento. Mr. Bennett has been active in Association work, being a director of the Sacramento Valley Electrical Society and chairman of its program committee. He is also a member of the Sacramento Radio Dealers' Association.

Merchandising Helps on Irons and Ironers

The 96-page, illustrated manual, prepared by The Society for Electrical Development to assist retailers to sell more irons and ironers is now off the press. Non-members of the Society can obtain copies of this manual by writing to the above organization at 522 Fifth Avenue, New York, N. Y. Price, \$1 per copy.

Monterey District Electrical League Is Organized

At a dinner meeting held recently, in Hotel Cominos at Salinas, Calif., forty-five representatives of the elec-

STANDARD SYMBOLS FOR WIRING PLANS

As recommended and adopted by the Association of Electragists, International, The American Institute of Architects and the American Institute of Electrical Engineers, and approved by the American Engineering Standards Committee on March 6th, 1924

	Ceiling Outlet	|| This Character Marked on Tap Circuits Indicates 2 Number 14 Conductors in 1/2" Conduit
	Ceiling Outlet (Gas and Electric)	||| This Character Marked on Tap Circuits Indicates 3 Number 14 Conductors in 1/2" Conduit
	Ceiling Lamp Receptacle <i>Specification to Describe Type Such as Key, Keyless or Pull Chain.</i>	|||| This Character Marked on Tap Circuits Indicates 4 Number 14 Conductors in 3/4" Conduit Unless Marked 1/2"
	Ceiling Outlet for Extensions	||||| This Character Marked on Tap Circuits Indicates 5 Number 14 Conductors in 3/4" Conduit
	Ceiling Fan Outlet	||||| This Character Marked on Tap Circuits Indicates 6 Number 14 Conductors in 1" Conduit Unless Marked 3/4"
	Pull Switch	||||| This Character Marked on Tap Circuits Indicates 7 Number 14 Conductors in 1" Conduit
	Drop Cord	||||| This Character Marked on Tap Circuits Indicates 8 Number 14 Conductors in 1" Conduit
	Wall Bracket	
	Wall Bracket (Gas and Electric)	
	Wall Outlet for Extensions	
	Wall Fan Outlet	
	Wall Lamp Receptacle <i>Specification to Describe Type Such as Key, Keyless or Pull Chain</i>	
	Single Convenience Outlet	
	Double Convenience Outlet	
	Junction Box	
	Special Purpose Outlet <i>Lighting, Heating and Power as Described in Specification</i>	
	Special Purpose Outlet <i>Lighting, Heating and Power as Described in Specification</i>	
	Special Purpose Outlet <i>Lighting, Heating and Power as Described in Specification</i>	
	Exit Light	
	Floor Outlet	
	Floor Elbow	
	Floor Tee	
S ¹	Local Switch—Single Pole	
S ²	Local Switch—Double Pole	
S ³	Local Switch—3 Way	
S ⁴	Local Switch—4 Way	
S ^D	Automatic Door Switch	
S ^K	Key Push Button Switch	
S ^E	Electroliner Switch	
S ^P	Push Button Switch and Pilot	
S ^R	Remote Control Push Button Switch	
	Tank Switch	
	Motor	
	Motor Controller	
	Lighting Panel	
	Power Panel	
	Heating Panel	
	Pull Box	
	Cable Supporting Box	
	Meter	
	Transformer	
—	Branch Circuit, Run Concealed Under Floor Above	
---	Branch Circuit, Run Exposed	
—	Branch Circuit, Run Concealed Under Floor	
NOTE—If larger conductors than number 14 are used, use the same symbols and mark the conductor and conduit size on the run		
Feeder Run Concealed Under Floor Above		
Feeder Run Exposed		
Feeder Run Concealed Under Floor		
Pole Line		
Push Button		
Buzzer		
Bell		
Annunciator		
Interior Telephone		
Public Telephone		
Clock (Secondary)		
Clock (Master)		
Time Stamp		
Electric Door Opener		
Local Fire Alarm Gong		
City Fire Alarm Station		
Local Fire Alarm Station		
Fire Alarm Central Station		
Speaking Tube		
Nurse's Signal Plug		
Maid's Plug		
Horn Outlet		
District Messenger Call		
Watchman Station		
Watchman Central Station Detector		
Public Telephone—P B X Switchboard		
Interconnection Telephone Central Switchboard		
Interconnection Cabinet		
Telephone Cabinet		
Telegraph Cabinet		
Special Outlet for Signal System <i>As Described in Specification</i>		
Battery		
Signal Wires in Conduit <i>Concealed Under Floor</i>		
Signal Wires in Conduit <i>Concealed Under Floor Above</i>		

California State Association of Electrical Contractors and Dealers

Symbols that have been standardized for use in indicating electrical construction work. The use of these markings on plans will tend to simplify many of the problems of estimators.

trical industry organized the Electrical Development League of the Monterey Bay District. The purpose of this organization is to bring the electrical contractor, dealer and power company men together at monthly meetings for general discussion of their common problems to the end that the public may be better served; and it is planned to bring to these meetings, from San Francisco and elsewhere, speakers qualified to bring to the local electrical men the experience and activities of the electrical industry in other sections of the state, the findings of the electrical re-

search laboratories and other valuable information and data.

J. F. Pollard, of the Coast Valleys Gas & Electric Company, presided as temporary chairman pending the election of officers, at which time the following were selected: E. Roy Nash, Monterey Electric Works, Monterey, president; Walter Cox, Cox Electric Company, Santa Cruz, vice-president; Morris F. Wales, Coast Counties Gas & Electric Company, Salinas, secretary-treasurer.

The speaker at the initial meeting was Arthur E. Rowe, of San Francisco.

Changes Announced in Salt Lake Wiring Ordinance

Enclosed Indicating Entrance Switches Required Together with Other Provisions for Better Installations

The following ordinance amending sections 607, 610 and 1272 of the Revised Ordinances of Salt Lake City, Utah, 1920, with respect to electrical installation and wiring came into effect May 12, 1924:

Section 607. Each application for a permit to install electric wiring consisting of more than eight (8) lighting circuits, or more than four (4) motors, or more than four (4) electric ranges, must have attached thereto a sketch or blue print, showing in detail the proposed method of installing wiring and apparatus.

Section 1272. Contracting Electrician. It shall be unlawful for any person to engage in, commence, conduct or carry on the business of a contracting electrician without first obtaining a license so to do. The license fee payable under this section shall be Twenty-five Dollars (\$25.00) per annum. For the purpose of this section contracting electrician shall be defined as any person having an established place of business in Salt Lake City and regularly engaged in the business of installing electrical wiring, fixtures, apparatus, or appliances for furnishing light, heat or power, telegraph, telephone, district messenger or other electrical work.

Section II. (e) All conductors entering buildings from overhead lines shall be enclosed in approved rigid metal conduit having weatherproof threaded joints and equipped with approved service head, and all wires of same circuit shall be placed in the same conduit. When approved by the City Inspector, armored, flexible cable may be used instead of rigid metal conduit.

For low potential systems except where switchboard is installed, the inner end of service conduit shall enter an approved metal service cabinet enclosing service switch and service fuse or fuses. This metal service cabinet shall be grounded, and shall be of such construction as to indicate plainly whether service switch is open or closed, and to allow the operation of the switch from the outside of the box without opening the box or exposing any current carrying parts. The construction shall be such that the switch in itself serves for load controlling, switching or meter testing purposes, and when used for testing purposes, it shall have at least one protecting fuse in circuit at all times. This metal service cabinet shall have a hinged cover, so arranged that the cabinet may be sealed, either by the company supplying the current or by the City Inspector.

(f) All meter loops up to and including 100 amperes shall be controlled by switches equipped with testing clips and the service cabinet shall be of such construction as to receive the standardized meter trims which the company supplying the current shall provide. These service cabinets shall be installed with blank end-walls.

(g) All wires hereafter installed for furnishing light, heat or power in any building in the districts known as fire limits No. 1, No. 2, and No. 3 must be in conduit.

(h) All buildings hereafter erected, to be used for public or industrial purposes, such as churches, stores, halls, school buildings, garages, manufacturing establishments and warehouses must be wired in conduit. All apartment houses more than one story high containing five or more apartments or rooms, must be wired in conduit.

(k) All plug outlets or receptacles placed less than five feet above the floor must be of the parallel plug type.

(l) All branch cutouts must be enclosed in metal boxes.

of the gold mines, pointed out the interdependence of the two industries and urged their cooperation. J. F. Callbreath, secretary of the American Mining Congress, Washington, D. C., and George A. Stahl, Colorado representative on the board of governors of that organization, were among the guests. Several violin solos were played by Russell Keeny, with piano accompaniment by Miss Sleeper.

During the course of the meeting Mr. Willis was selected to represent the society at the annual convention of the Pacific Coast Electrical Association at Coronado, Calif. Announcement was also made that the Sacramento society had tied with the San Diego Electric Club in the "Smiles" Campaign in connection with the Courteous Service Club. R. T. Stephens and Roy N. Phelan were team captains in the drive made by the Sacramento Valley Electrical Society.

San Leandro, Calif., Fixes License Fees for Electrical Contractors.—An ordinance recently adopted by the city of San Leandro, Calif., provides for two classes of licenses, namely, Class A—\$25 per year for an electrical contractor, and Class B—\$12 per year for an industrial plant that does its own electrical work. A table of inspection fees is provided in the ordinance, and a deposit of \$50 required as a guarantee that its terms will be complied with. It is suggested that electrical contractors doing business in San Leandro apply to J. J. Gill, city clerk, or F. C. Colville, recently appointed city electrician, for a copy of the ordinance.

Cooperative Electric Company, Oakland, Calif., has moved from 640 Thirteenth Street to 3937 Grove Street in that city. The company will continue to engage in merchandising electrical devices, fixtures and radio supplies and will maintain its electrical construction department.

Accounting Problem Questions Answered by Expert

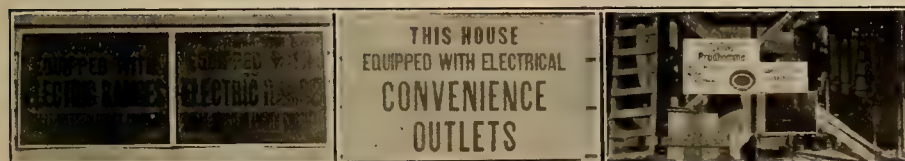
The Journal of Electricity has made arrangements with F. V. Mitchell, public accountant of San Francisco, to answer, in these columns, such questions as may be asked on accounting. All readers are invited to forward their inquiries to The Editors, Journal of Electricity. The answers will be published as soon as possible following the receipt of the inquiry.

Question:

Is it necessary to put expense items paid during the current month through Accounts Payable when entering in the Combined Cash Book-Journal?

Answer:

It is not necessary to enter expense items paid in the month in which they are incurred, in Accounts Payable. These should be charged direct to the proper expense caption when paid, as the only reason for entering an expense item through Accounts Payable is to get it charged against the proper month's operations when it is not paid during the month incurred.



Job signs used to indicate adequate wiring of homes.

New Job Signs in Strong Appeal for Adequate Wiring

A new job sign, designed to stimulate more and better wiring, has recently been produced by the California Electrical Cooperative Campaign. This sign, which reads, "This House Equipped with Electrical Convenience Outlets," is placed by the electrical contractor on all jobs where there is specified at least one convenience outlet for each room. The message to the passing public leaves the inference that an especially complete electrical installation is being made, and when supplemented by the job sign of the contractor, produces excellent publicity.

Another new job sign recently seen on buildings to be supplied with electric service by the Great Western Power Company states that an electric range is being installed. This sign is placed on the new premises by the company as soon as the range is sold, and ties in admirably with the other two signs, adding materially to the force of the electrical story that is being told.

Two of the accompanying pictures show the design of the signs of the power company and the Cooperative Campaign, and the third shows them both in place on the new home of F. E. Lupie, Sacramento, Calif., together with the regular job sign of Clifford Prudhomme, Sacramento electrical contractor, who is making the electrical installation.

Sacramento Valley Electrical Society Holds Meeting

The regular meeting of the Sacramento Valley Electrical Society was held Wednesday evening, June 11, at the Hotel Land, Sacramento, Calif. Harold Willis, president of the society, officiated.

The program was in charge of the Automotive Electrical Division of the society. G. T. Lundee, in a short talk on the automotive electrical industry, spoke of the work of the Automotive Electric Service Association and its educational campaigns to elevate the standards of the industry. A film of the Northeast Electric Company showed some interesting details of the history and use of automotive equipment.

The principal speaker of the evening was Frank H. Probert, dean of the College of Mines of the University of California, Berkeley, who addressed the gathering on "The Romance of Mining," tracing the development of the industry from the beginning down to the present time.

Bert F. Hughes, manager of the department of mines of the Sacramento Chamber of Commerce, directed attention to the fact that the twenty-seventh annual convention of the American Mining Congress is to be held in Sacramento in September. He gave it as his opinion that the development of mining in California is dependent upon the electrical industry and the electrification

JOBBER, DEALER AND SALES AGENT



Decorate Windows and Interiors to Increase Sales

Thomas Day Company, Oakland, Calif., Utilizes Show Room Space and Windows to Display Fixtures and Appliances

To develop business through the use of specialized window trims and a close attention to every opportunity to make customers out of prospects has been the aim and the achievement of the Thomas Day Company of Oakland, Calif. Coupled with these two things has been an active merchandising program that has been conducted in the store itself when customers have called to make some purchase. The success that the Oakland dealer in fixtures and appliances has had bears evidence to the fact that a well balanced sales staff is conducting the business. Establishments are also maintained at San Francisco and Sacramento by the Thomas Day Company.

The window displays featured by the Thomas Day Company probably attract more attention to the store than does any other single feature. These displays have been worked up in a most systematic fashion and have been designed to follow a definite schedule that of course ties in closely with the advertising campaigns appearing simultaneously in the local papers.

In laying out the displays for the company, Mrs. Kathryn M. Tefft has been the directing head. Her work, however, is not limited to trimming the show windows, for she is also given the task of arranging the interior of all of the display rooms. Under the schedule adopted by Mrs. Tefft, the displays presented in the windows are changed once a week. In leaving them for a week, the company gives the public ample time to view any particular display and at the same time prevents any display from getting the appearance of being a fixed ornament.

Wherever possible, the display for any particular week is made to tie in with some event of either local or national importance. The ingenuity of the decorator is called forth to make the display appropriate and the results have been found to be well worth the extra effort required. Another feature that has been adopted in connection with the window displays is the focusing of sales activity on one class of merchandise. Both the advertising and the window trims are centered around the particular class of merchandise for the week, and sales persons are well informed as to the prices and applications of the featured goods and also the sales arguments needed in comprehensively demonstrating them.

Recently the Thomas Day Company has made several changes in the interior of the Oakland store in order to make it easier for the customer to purchase and at the same time to enable salesmen

to better serve the customers. The change has been in the nature of dividing the former store width in half, thus reducing the distance that any customer will have to walk to reach any particular department on the first floor. By making the first floor show-room more compact, the company has been able to place the customer for one particular device in such a position that immediately adjacent is seen a display of some other device in which the purchaser can be interested by an adroit salesman.

After sizing up the customer, the salesman is able to suggest some other appliance in which the purchaser may be interested, and as a result the volume of sales is increased considerably.

After diminishing the size of the first floor sales room, the company moved its radio department and the larger part of the portable lamp stock to the second floor of the building. This floor is reached by an elevator and when customers have been taken there they are allowed to spend as much time as they desire, in picking out merchandise that they need. Separate display rooms are provided on the third floor for the various classes of fixtures in order that customers may compare fixtures of a similar type and price, without being forced to remember the characteristics of some particular fixture in an adjoining room. All fixtures are provided with specially designed plugs to fit outlets in ceiling or wall, so that every piece can be shown lighted in any of the fifteen fixture display rooms, making for a very flexible arrangement, and eliminating in this department also the "set" appearance common to most lighting fixture displays.

The salesman secures from the customer the information as to about how much he wishes to pay for fixtures, and then shows a line approximating this cost, endeavoring always to sell at least the next grade higher by judicious suggestion. This plan has been found to work much better than the old one of showing the best first, for often after a customer had admired a hand made piece, it was difficult to sell the article he could afford. The "Three per cent for lighting equipment" slogan is always emphasized.

The radio display room is also situated on the second floor of the building occupied by the company; one set only being displayed at a time on the first floor, but no demonstrations are made there. The radio room is so wired that any set handled by the company may be plugged into a wall outlet that has both aerial and ground connections, and

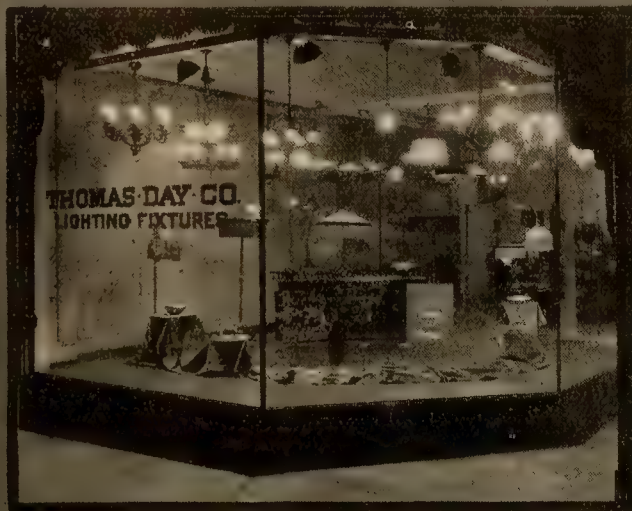
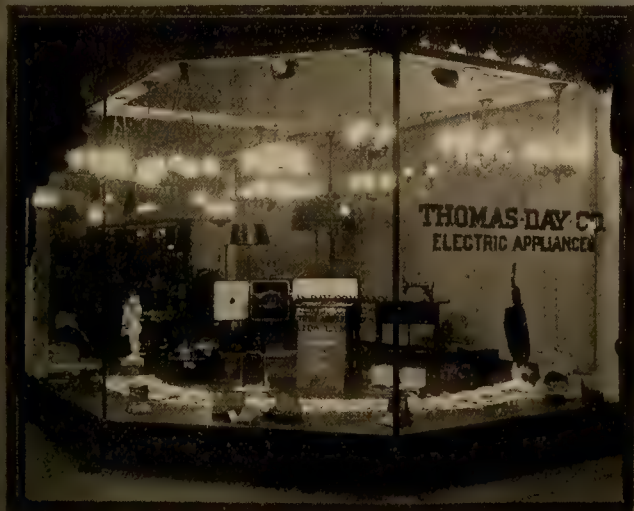
demonstrated to the interested prospect. By isolating the demonstration room from the rest of the store, the company has made the customer feel at ease, and has kept the sounds of the radio programs from the other display rooms. Softly shaded lamps and comfortable chairs complete the furnishing of the room.

Electric ranges and water heaters are displayed on the third floor also. A model kitchen has been set up, and everything is handy, permitting the demonstrator to prepare an entire meal before the eyes of the prospect. These demonstrations are all made on appointment, in order that neither the prospect nor the demonstrator may be kept waiting. Scheduling demonstrations only by appointment also has the advantages of requiring that food be on hand only when necessary, thus eliminating waste in this department.

To develop all classes of appliance and fixture business, the Thomas Day Company has employed a system of covering the field of new building and alterations, that works out in a most satisfactory manner. The system consists of a duplicate card system and follow-up letters to all persons who have taken out building permits in Oakland, Alameda, and Berkeley. One prospect card, containing all the permit information, is given the salesman, and a duplicate kept in the office. The salesman reports calls and progress made, and this information is recorded on the duplicate, so the office at all times has a complete history of the job. Two fixture letters are sent all prospects, one going out the same day the permit is issued, and the other thirty days later, while to all residences of \$3,000 and over a series of electric cooking and heating letters are sent; the first emphasizing the wiring requirements, although this company does no wiring business, and the second brings to the attention the actual equipment. The staff is always ready to assist builders in planning installations and preparing specifications for complete electrical equipment, and this has been found a builder of good will as well as good business.

Sales-Manual on Irons and Ironers to Be Published.—A 96-page well illustrated manual to help sell more irons and ironers, to be published by The Society for Electrical Development, is now on the press.

The Albert Sechrist Manufacturing Company, of Denver, Colo., has closed its retail fixture display rooms at 17th and Tremont Streets and will consolidate them with the factory at 1717 Logan Street, according to a recent announcement of K. L. Francis.



TYPICAL window displays of the Thomas Day Company, Oakland, Calif., store. In utilizing the simplified and single-appeal type of window trims the company is able to devote more time to the specific line of merchandise being pushed at any particular time and in this way secures more satisfactory results. Window displays are changed regularly, a definite schedule being followed. Newspaper advertising is prepared to tie in closely with the company's show window campaigns.



INDUSTRIAL NEWS



Electricity Production Summary by Geological Survey

The Department of the Interior, through the Geological Survey, has just made public a summary of the annual production of electric power and the consumption of fuels by electric public utility power plants in the United States for the years 1919-1923, inclusive. The information is based upon monthly reports received from about 4,000 power plants generating electricity for public use. The capacity of the generators of these plants at the present time is about 18,000,000 kw., of which 10.7 per cent represents the Pacific states and 4 per cent the Mountain states.

In 1919 the total production of electricity for public use amounted to about 38,921,000,000 kw-hr. In 1923 it amounted to over 55,674,000,000 kw-hr., an increase of approximately 43 per cent. Of the 1923 output 34.8 per cent was produced by the use of water power and 65.2 per cent by fuel power, while in 1919 37.5 per cent had been produced by water power and 62.5 by fuel. However, it should be borne in mind that the amount of electricity produced by water power depends upon the supply of water available and an increase in that supply would naturally result in increased production at water-power plants, with a corresponding increase in ratio.

Output figures for each month in 1919 not having been compiled, state comparisons start with 1920. In that year the Mountain states produced 5.95 per cent of the total output and the Pacific states 12.42 per cent. In 1923 the latter figure increased to 12.77 per cent while that for the Mountain states decreased to 5.10 per cent. Of the Mountain division Montana led in production, the total being 1,126,016,000 kw-hr. in 1920 and 1,138,545,000 kw-hr. in 1923. Idaho came second with 590,864,000 kw-hr. in 1920 and 694,871,000 kw-hr. in 1923. In the Pacific group, California produced in 1920 3,735,645,000 kw-hr., which was 8.58 per cent of the total output; Washington was second with 1,196,725,000 kw-hr., or 2.75 per cent of the total; and Oregon third with 475,543,000 kw-hr. or 1.09 per cent. In 1923 the figures stood: California 5,069,314,000 kw-hr., 9.10 per cent; Washington 1,446,486,000 kw-hr., 2.60 per cent; Oregon 594,434,000 kw-hr., 1.07 per cent.

The ten most important states in the production of electricity for the years 1920-1923 are given, in the order of their rank, as: New York, Pennsylvania, California, Illinois, Ohio, Michigan, Massachusetts, Washington, West Virginia and Montana. The first seven have maintained their relative standing throughout the period, and the percentages of the total United States' produc-

tion for the first three in 1923 were, respectively, 15.67, 9.77 and 9.10.

In the production of electricity by water power New York led in 1920 with 18.76 per cent of the total output of the country, and California second with 15.91 per cent. For the three years following California was first and New York second, the percentages of the total in 1923 being 21.20 and 18.41, respectively.

The total consumption of fuel oil in the generation of electrical power amounted in 1920 to 13,122,704 barrels. In this California took first place, using 43.02 per cent. In 1923 total consumption amounted to 14,679,205 barrels, and California was first again with 22.68 per cent. As a whole, the Pacific states consumed 44.29 per cent of the entire amount consumed in 1920 and 24.68 per cent in 1923. Texas ranked second in the use of fuel oil for this purpose. Figures given for the consumption of gas in the production of electricity showed a slight amount used in Montana and Wyoming, while California consumed in 1920 12.03 per cent of the total with an increase to 21.24 per cent in 1923.

Copies of the summary may be obtained upon application to the director of the Geological Survey, Washington, D. C.

Chairmen of Sections of N.E.L.A. Announced by President

Included among the appointments to the chairmanships of the sections of the National Electric Light Association for the coming year is that of W. R. Putnam, vice-president and general manager of the Idaho Power Company, Boise, Idaho, who will head the activities of the commercial section, according to an announcement made by Franklin T. Griffith, president of the association.

Mr. Griffith announced the chairmen of the other sections as follows: accounting, W. Paxton Little, treasurer Niagara Falls Power Company, Niagara Falls, N. Y.; technical, Horace P. Liveridge, Philadelphia Electric Company, Philadelphia, Pa.; public relations, Matthew S. Sloan, president Brooklyn Edison Company, Inc., New York, N. Y. Samuel Insull, president of the Commonwealth Edison Company, Chicago, Ill., has been appointed chairman of the public policy committee.

Electragists' Convention to Be Held in September.—The twenty-fifth annual convention of the Association of Electragists, Int., will be held at West Baden Springs, Ind., Sept. 29-Oct. 4. Representatives from all over the United States will be in attendance at the convention.

Fisheries Bureau Removes Baker River Plant Objection

Construction work on the hydroelectric plant of the Puget Sound Power & Light Company at Concrete on Baker River in Skagit County, Wash., may begin at the convenience of the company, following withdrawal of the protest filed by the United States Bureau of Fisheries, according to Chas. J. Bartholet, assistant state supervisor of hydraulics.

The bureau objected to the construction of the plant, which includes the erection of an impounding dam 235 ft. high, on the grounds that the dam would prevent salmon from ascending the river to their natural spawning grounds and especially because the development would render useless a hatchery of many years' standing at Baker Lake. A fish ladder was impracticable, it was held.

Following negotiations, the company proposed two methods whereby the development would not interfere with the fish, according to J. R. Russell, field superintendent for the bureau. The company at its own expense will construct a pond below the dam and the bureau is to catch and place a quantity of adult salmon taken while enroute to Baker Lake and determine whether they can be held to maturity at Concrete below the dam, it was stated.

If this proves feasible, the bureau can avail itself of the provision in the state law and accept a hatchery below the dam in lieu of a fishway, Russell said. Should this method fail, the company will install and operate a lift which will put the live fish into the pond above the dam and will permit an overflow over or through the dam during the month of June each year to permit the young salmon to migrate down stream.

The proposal of the company has met with the approval of the bureau, Russell stated, which removes the only obstacle to the development of the site. The plant will have a capacity of 45,000 hp. and will cost approximately \$500,000, according to the estimate.

Relation of Electricity to Farming is Discussed.—A conference of farm representatives, electric power company men, state and Portland Chamber of Commerce delegates and agricultural college authorities, was held at Corvallis, Ore., on May 5, to consider the relation of electricity to agriculture in Oregon. At the conference it was decided that an investigation of the use of electricity on the farm should be undertaken. The conference delegates authorized James T. Jardine, director of the experiment station at the Oregon Agricultural College, to appoint a committee to make the investigation.

Order Power Conservation in Southern California

Power Supervisor to Direct Intelligent Distribution of Power During Period of Shortage Caused by Drought

Due to an unprecedented dry year and a tremendous increase in load California electric utilities are faced with the most serious situation in their history and the Southern California Edison Company, on account of the extent of the territory it serves, has found it physically impossible to meet the demands for power and has ordered a 25 per cent curtailment of power usage over its entire system. The order became effective June 16.

This order came as a result of a conference between executives and engineers of all southern California electric utilities and representatives of the California Railroad Commission held in Los Angeles June 13. The meeting was called at the instigation of the railroad commission to consider steps to meet the present emergency. Testimony at the hearing brought out the fact that there would be a shortage of 126,000,000 kw-hr. on the Edison system during the last six months of the year which would require a curtailment of approximately 20 per cent.

Other utilities represented at the hearing showed that they would be able to meet the demands for power on their own systems and in the case of several of the companies they would be able to furnish power to the Edison company to help relieve the situation on its own system. A unanimous request was made by the utilities represented for the appointment of a power supervisor to assist in an intelligent distribution of the power available.

In curtailing the use of energy unnecessary employment of power for flood lighting, display lighting, etc., will be discontinued first. Industrial consumers, street railways and municipalities will be asked to reduce their energy consumption to three-quarters of normal. The Los Angeles Bureau of Power and Light, the largest individual consumer on the Edison system, will receive a 25 per cent cut in its kilowatt-hour delivery and will be forced to allocate this among its own customers.

Other utilities of the section affected have not yet felt the necessity of ordering curtailment on their respective systems but have agreed to carry on an educational campaign for conservation of power and to assist the Edison company by delivering to it all surplus energy available. California utilities are exerting every effort to cope with the deficiency in hydroelectric output caused by the worst drought in the history of the state and every available kilowatt of steam capacity is being pressed into service. New equipment is being installed as rapidly as possible and many obsolete steam plants are being rehabilitated and placed in service. Extensive use is being made of the large interconnected transmission system of the state for the interchange of power.

Although the situation is acute in northern California the utilities in that section expect to be able to meet the demands for power by rigid conservation without the necessity for enforced curtailment. No improvement in the situation is expected before Nov. 1 or

possibly later unless early fall rains replenish the water supply.

At a second hearing called by the railroad commission in Los Angeles June 19, power company representatives, members of the Los Angeles Chamber of Commerce, the Los Angeles Bureau of Power and Light and the commission's engineers further considered the question of the power shortage. J. G. Butler, former chief of the division of water rights, state department of public works, who acted as power administrator during 1920, was selected as power supervisor during the present shortage. Until the arrival of Mr. Butler from the East, A. V. Guilou, gas engineer with the Railroad Commission, will take over the duties of this office.

Officials of the Los Angeles Chamber of Commerce assured the commission that they would take immediate steps to interest Chambers of Commerce in other cities in power conservation.

All power companies in the state are cooperating to the fullest extent. The Bureau of Power and Light of Los Angeles is taking every possible step to assist the Southern California Edison Company to meet the emergency on its system.

In connection with its 25 per cent curtailment order, the Southern California Edison Company is sending the following letter to all of its 235,000 consumers:

TO OUR CONSUMERS:

Owing to the unprecedented drouth of the past winter and spring we are faced with a serious shortage of power which could not be foreseen and was impossible to prevent. Consequently, it now becomes necessary to urgently request the active assistance and cooperation of our customers to at once restrict the use of electric energy in order that extreme drastic measures may not have to be put into effect later on. As a matter of fact, the shortage in kilowatt-hours available is equivalent to 25 per cent of the estimated requirements and the demand must now be reduced an equivalent amount in order to meet the conditions. This applies to each individual consumer.

The Southern California Edison Company is obtaining power from all possible sources. Many steam plants have been put into operation which have been out of commission for years past and new plants have been rushed in as rapidly as possible. In addition, the Edison company is buying all the power available from other companies. However, the shortage is so great that there are not enough available steam plants to make up the deficiency because of the shortage of water. All power companies and municipalities are cooperating in order that the energy available may be distributed to the best advantage for the benefit of the entire territory supplied. What is being done regarding the curtailment of uses and distribution of available energy from all sources is with the approval of and under the direction of the Railroad Commission of the State of California.

Consumers are expected to make effective reductions in their demand for electric service in accordance with the following classifications:

1st—Domestic Consumers. Consumption of energy for residence lighting and for the operation of electric appliances for all uses should be reduced to a minimum and discontinued entirely where gas or other heating is available. Two lamps should not burn where one would be sufficient and appliances must not be left in circuit when not actually in operation. It is urgent that each domestic consumer should follow these instructions implicitly.

2nd—Commercial Consumers. All decorative, display, sign and window lighting to be entirely eliminated. Interior illumination for stores, warehouses and other places of business should be discontinued in the daylight hours and reduced during other hours not less than 25 per cent.

3rd—Industrial Plants. All manufacturing and industrial plants must cut the use of electric energy by a full 25 per cent. This includes

energy for both lighting and power uses. Such cut to be made between the hours of 6:00 a.m. and 10:00 p.m.

4th—Agricultural Consumers. Power used for irrigation must be reduced as much as possible, having due regard for the necessary requirements of growing crops. Those in charge of pumping plants should see that no pumped water is wasted through careless operation and that growing crops only receive sufficient water in order that their needs may be taken care of. Where the farmer can use a gasoline engine or a tractor to drive his pump it is necessary that he should cooperate to that extent.

5th—Street Lighting. It will be necessary to reduce the number of lamps in use on all streets and highways to a minimum. One or two lights in a block will be required to take the place of five or six which may now be in use. In other instances where the same number of lamps must be kept burning as heretofore, the candlepower of each lamp shall be reduced 50 per cent.

6th—Street Railways. Companies operating electric cars for city and suburban service will be required to reduce their demand 25 per cent, even if it is necessary to reduce the number of cars in operation to the same extent.

Your earnest cooperation is needed and expected, to assist in helping the state to successfully cope with present emergency conditions.

Yours truly,

SOUTHERN CALIFORNIA EDISON COMPANY.

Human Interest Is Paramount in Edison Light Advertising

Two series of advertisements with a high degree of human appeal and with unusual features for arresting and holding interest were made the basis of a campaign in store window lighting and office lighting by the Edison Electric Illuminating Company, of Boston, during April, May and June. Two of these advertisements, one from each group, are reproduced herewith to show the general nature of the copy.

In both groups the make-up is similar. Each advertisement is headed by a cut of catchy appearance having a caption intended to grasp and hold the

The two looked just alike in her notes



BUT the word that was written made an important mistake in an important letter. And the mistake was an expensive one. It would have been far cheaper to give the stenographer good light to read her notes.

Too many offices handicap their own progress with poor lighting. Within the past few years, the science of correct office lighting has advanced just as much as you have seen lighting improve in your own home. Why not bring your office lighting up to date, before the mistake occurs in your business.

The Trojan Office Unit has no glare, it casts no dark shadow. It fills the room with a clear light that is restful to the eyes and pleasant to work by. It eliminates the chief source of headaches and eyestrain and office weariness. It banishes one great cause of costly errors.

Let us send you information about it. It is inexpensive, and you can pay for it with your monthly light bills. It is simply and quickly installed. Telephone or write us today, and everyone in your office will be glad, as well as you.

EDISON LIGHT OF BOSTON

ILLUMINATING ENGINEERING DIVISION

39 BOYLSTON STREET

REACH 3300


Mistakes and lost time were charged against poor illumination in the office lighting series.

reader's interest. The reading matter then ties in with the caption and presents one or two logical arguments for using better light, and offers the free services of the company's engineers to suggest and design the particular installation necessary to produce the desired effect.

In the window lighting group the copy states that only three out of every ten Boston merchants have adequate window lighting, and that these three are getting business that might other-

wise go to competitors. The idea that good illumination attracts prospective buyers, and produces more sales and larger profits, is stressed throughout.

In the office lighting group the idea that insufficient light causes loss of time and lowers the efficiency of office employees, with the consequent increased cost to the employer, is devel-



193% more window shoppers

A NEW ENGLAND merchant who believed that plenty of light meant plenty of business, made the test. He made his window lighting better than his neighbors, better than his competitors, and then he watched.

Before, 14 people out of a hundred had stopped; now 41 stopped to examine the goods on display.

His window shoppers increased 193 per cent. Better than that, the number of his customers increased, the total of his sales increased, business was brisk, and even slow-moving stock moved faster.

Will you make a test in your own store?

We have a staff of expert lighting engineers who are at your call. One of them will inspect your window lighting, and furnish you with the best lighting plans for your own windows, complete with working drawings from which your own contractor can work quickly and without disturbing your business. To customers of our Company there is no charge or obligation for the service of our engineers. Write or telephone today to

EDISON LIGHT of BOSTON
ILLUMINATING ENGINEERING DIVISION
39 BOYLSTON STREET BEACH 3300

The value of well lighted show windows was stressed in one series of advertisements.

oped. The human element is introduced by featuring the trials and tribulations of the stenographer that has made costly mistakes in transcribing her dictation, due to poor light, and the series as a whole treats the prosaic and well-worn subjects in a new and attractive manner.

Raising of Lake Fordyce Dam Is Resumed by Utility

Work on the raising of Lake Fordyce Dam of the Pacific Gas and Electric Company has been resumed. The dam will be raised 47 ft. and the capacity of the reservoir thus created will nearly double that of the dam originally built there in 1881. The storage capacity of

Lake Fordyce will be 47,000 acre-feet when the present construction work is completed.

Lake Fordyce Dam is situated on Fordyce Creek, a tributary of the South Fork of the Yuba River, about 9 miles from Cisco, Calif. The lake is at the head of the company's Spaulding-Drum system and is at an elevation of about 4,875 ft. The dam is a rock-filled structure about 800 ft. long, 140 ft. thick at the foundation and when completed in 1881, rose to a height of 92 ft. In adding 47 ft. to the height of the dam, a total of 300,000 cu. yd. will be quarried from the mountain side and added to the present dam.

Preliminary work in connection with raising the dam was started in 1923, and it is the hope of the Pacific Gas and Electric Company to complete the work there this year. In addition to raising the height of the dam, the company will line the entire upper stream face of the finished rock-filled dam with concrete to prevent leakage.

Manuals for Building Electric Range Business

The four manuals on electric range business development which The Society for Electrical Development prepared in cooperation with the Electric Cooking and Heating Division of the Commercial National Section, National Electric Light Association, are now off the press.

Three of these manuals deal respectively with Sales Management, Advertising and Retail Sales and Management. Each contains 96 pages, is well illustrated and covers very completely an important phase of electric range development. Copies are now available to non-members of the society at \$2 each. The fourth manual, which deals with Servicing, contains 32 pages and is also illustrated. Copies are available to non-members of the society at \$1 each. Full information may be obtained from The Society for Electrical Development at 522 Fifth Avenue, New York, N. Y.

Crouse-Hinds Company, Syracuse, N. Y., has recently issued bulletin No. 2059. The bulletin is entitled "Condulets for Concealing in Concrete," and contains illustrations and descriptions of the company's line of this material.

Civic League Urges Separation of Water and Power Bonds

In a special report sent to the Board of Supervisors of San Francisco, the board of governors of the Civic League of Improvement Clubs and Associations stated that it was of the opinion of the latter board that separate propositions should be made to the public in regard to securing additional funds for the completion of the Hetch Hetchy water system and for the erection of an electrical distributing system in San Francisco. The report stated that it had been estimated that \$33,000,000 would be needed to complete the water project and that in addition to this it would be necessary to secure at least \$15,000,000 for the purchase of an established plant from a local power corporation or the municipal construction of a distributing system.

In regard to the separating of the two proposals, the report sent to the Board of Supervisors states:

The Civic League has asked that a separate bond proposition be submitted to the people for the construction or purchase of a municipal hydroelectric power system at the same election, so the people may express themselves as to whether they desire to engage in the municipal power business. The Civic League is not committed against municipal power distribution, if same can be sanely financed.

If the people by a vote authorize a bond issue for municipal distribution of power, such is the only authority and sane financing for San Francisco to engage in the hydroelectric power business.

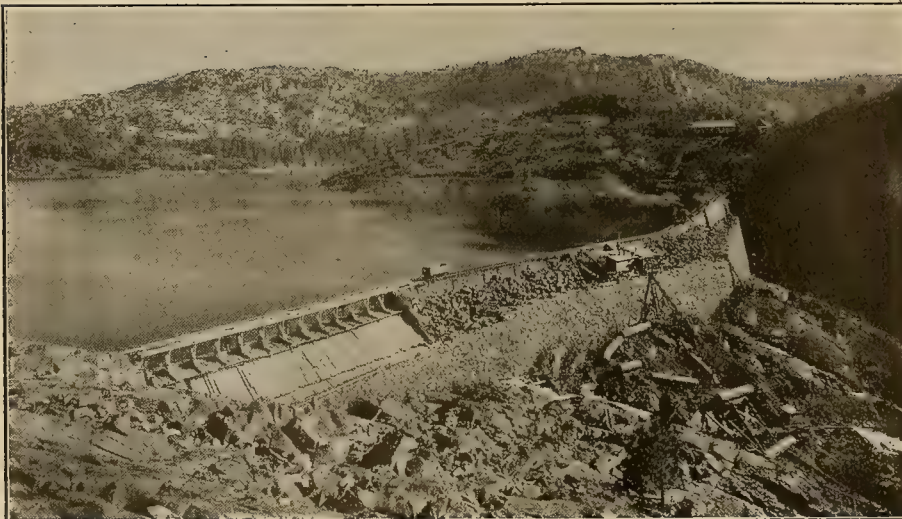
Considerable discussion has been engaged in by the San Francisco supervisors as to whether or not the two propositions should be combined in one bond issue and at the time of going to press no decision had been reached. Judge John C. Thomson, San Francisco's bond expert in New York, has advised the supervisors that in his opinion it is not advisable to combine the two amounts for water and power in a single bond issue. It was his opinion that the combining of the two propositions could only be justified if the two purposes are inherently a part of one enterprise, and that past history has indicated that the two purposes are really separate and should not be combined.

Application Filed for Queets River Hydro Project

Development of a hydroelectric plant with an ultimate capacity of 20,000 hp. at an estimated cost of \$1,000,000 is indicated in the application for water rights on the Queets River in Jefferson County filed with Marvin Chase, Washington supervisor of hydraulics, by the Grays Harbor Railway & Light Company of Aberdeen.

The company asks for 3,000 sec.-ft. of water, to be diverted from the Queets River just below the confluence of the Clearwater River with that stream, and for reservoir rights on the stream. The development will be known as the Fisher Rapids power plant and will be developed in two units, the first of which will generate 10,000 hp.

The impounding dam will be 50 ft. high, 700 ft. long on the top and 350 ft. long at the bottom, using the water at a 68-ft. head. Development will also entail the construction of a pipe line 4,000 ft. in length. No definite time was given as to when work will start on the plant.



Lake Fordyce Dam of the Pacific Gas and Electric Company that is being raised 47 ft. to double the capacity of the reservoir.

Hydroelectric Resources of Washington Studied

University Bulletin Makes Comprehensive Survey of Available Water Power and Suggests Superpower System

The creation of a Washington state superpower commission, "empowered to conduct comprehensive engineering power surveys of all the streams of the state, and to prepare plans for the economic development of all available power sources," is suggested by Carl Edward Magnusson, professor of electrical engineering in the University of Washington, in a bulletin recently issued by the university entitled, "Hydroelectric Power in Washington." This bulletin makes a reconnaissance survey of the water power resources of the state, using data obtained from reports and bulletins of the U. S. Geological Survey, the U. S. Weather Bureau, the State of Washington Geological Survey and engineering journals. A number of tables and plates are introduced to show the geography and topography of the state, the water sources and drainage areas, the developed and undeveloped power sites, the present and proposed transmission line systems, and a plan for a superpower system, proposed by the author for guiding future development.

In developing his idea of a superpower system, Professor Magnusson says, "The mere tying together of two or more power systems, that were designed and constructed to operate as independent units, can bring only a small part of the advantages that would be gained if the final scope of the system had formed the basis for the original design. The present interconnecting practice is merely a step in the right direction." He shows that the present interconnected lines follow in general the routes he suggested in 1919 for a trunk transmission line system that would be "basic for the effective development of the hydroelectric power on the Pacific Coast." This trunk line extends north and south, in the valleys paralleling the coast mountains from Canada to Mexico, and has various east and west laterals, two of which extend across Washington. At present the interconnected lines form an unbroken circuit from Montana to Puget Sound, and there are only three gaps totaling less than thirty-five miles between British Columbia and the Mexican border.

The bulletin lists eighty-six possible economic developments, ranging from 10,000-hp. to 750,000-hp capacity, that could be fed into this trunk line, and suggests that, since some of the streams are fed by rainfall and others by glaciers and snowfields, high water marks are attained at different seasons, so that great economy in operation would result from the control of the great transmission system as a unit. For the purpose of effecting further economy, he argues that less auxiliary steam plants would be required, and suggests that they be located near the coal mines so that the coal transportation cost may be saved, instead of, as is now the case, at the large load centers to which coal must be hauled. He points out that the main trunk transmission line passes directly through or near all the important coal fields of the state.

Professor Magnusson says that, from an engineering point of view, this superpower system is entirely practicable, but he directs the attention to other

outstanding obstacles in this statement, "Economic and legal problems of prime importance must be solved before any marked progress can be made towards the realization of state-wide superpower systems. Fundamental questions of ownership and control, regulation and management, and in fact most of the complex administrative and legal problems of public utilities, require new interpretations and call for solutions consistent with the imposed conditions." In this connection he advocates state or federal ownership, or the applying of "common carrier principles" to trunk transmission lines, and the making of the transmission of electric energy an independent business, distinct from the business of generation and distribution.

One of the interesting facts brought out in the bulletin is found in the table listing available water power by states, in which it is shown that Washington stands first with 8,647,000 hp., or 16.04 per cent of the total for the United States. California, Oregon, Idaho and Montana follow in the order named, and these five Western states encompass a total of 32,474,000 hp., or over 60 per cent of all the hydroelectric resources of the United States. These figures, it is shown, are unquestionably low, and in support of the statement that the future development of this power may exceed the estimate by fifty per cent, the case of Massachusetts is cited. In 1908, the U. S. Geological Survey estimated the maximum available water power of Massachusetts at 228,000 hp., whereas, in 1922, there was actually installed in that state a combined capacity in water wheels totaling 335,057 hp., or an increase of forty-seven per cent of the 1908 estimate.

Edison Company Rate Application to Be Heard July 14

The hearing of the Southern California Edison Company's application for an increase in rates for a nine-month period has been continued until July 14. On June 17 the company appeared before the California Railroad Commission with application for an increase in rates from July 1, 1924, to March 31, 1925, but on account of the application of attorneys representing consumers of the company, the case was continued over to July 14. If the rate increase is granted at the next hearing the new rates will probably go into effect Aug. 1.

The Edison company has proposed a system of surcharges which will yield the company approximately \$2,971,000, leaving the company a net shortage of \$789,000 for the nine-month period, as it is estimated that the expenses for the year will probably total \$5,568,000 greater than those of a normal year. The surcharges proposed called for the following increases:

General lighting service, surcharge $1\frac{1}{4}$ cents per kw-hr.; street lighting and flat rate service, surcharge 20 per cent; cooking and heating service, surcharge $\frac{1}{2}$ cent per kw-hr.; railway power service surcharge $\frac{3}{20}$ cent per kw-hr.; industrial power service, surcharge for installations up to 99 hp., $\frac{1}{2}$ cent; up to 999 hp., $\frac{7}{20}$ cent; and over 1,000 hp., $\frac{3}{20}$ cent; whole sale and resale power service, surcharge for installations up to 999 hp., $\frac{7}{20}$ cent; over 999 hp., $\frac{3}{20}$ cent; agricultural power service, surcharge $\frac{3}{20}$ cent per kw-hr.

Advice on Power Bond Issue Is Sought by Los Angeles

Following defeat by the people of Los Angeles of the \$21,000,000 bond issue, the returns from which were to be used in financing extensions and betterments to the distributing system of the Los Angeles Bureau of Power & Light, the Board of Public Service Commissioners of that city has formally requested the California Railroad Commission to determine the amount of bonds required to finance necessary extensions to the city's electric distributing system. In the application sent to the Railroad Commission, the Public Service Commission stipulated that none of the bond money would be used for acquiring the electric properties of the Los Angeles Gas & Electric Corporation or for building city lines that would parallel the lines of the Los Angeles Gas & Electric Corporation in any territory in which the corporation was exclusively furnishing service.

It is the intention of the Public Service Commission of Los Angeles to present another bond issue proposal to the voters at the Aug. 26 state and county primaries.

In the resolution sent to the Railroad Commission, the Public Service Commission requested that the Railroad Commission make "such investigation and review of the conditions of the Los Angeles municipal electric distributing system in relation to the demands on it for electric service as it may deem necessary, in order to determine the amount of bond funds required by the Bureau of Power and Light, to bring the system up to proper capacity and condition to meet all present demands, and to provide extensions and betterments to meet increases in demands during a three-year period."

Make New Call for Construction of Cushman Power House

Bids for the construction of power house unit No. 1 of the Lake Cushman power project of the city of Tacoma, Wash., have been rejected. New bids have been ordered and the new call provides for the separating of the work into two parts. The first part covers the diversion of the water from the site and the construction of the foundation, while the second is for the construction of the power house proper. J. L. Stannard, chief engineer of Tacoma, believes that by separating the work a material saving will be achieved.

The original bids for the construction of the power house were rejected because the low bid was illegal on account of the fact that the bidder failed to make the necessary affidavit. The second bid was unbalanced on unit cost, and the third bid was considered too high.

Large Generator Ordered by Edison Company.

The Southern California Edison Company has recently placed with the Westinghouse Electric & Manufacturing Company an order for a 28,000-kva., horizontal water wheel generator which will be installed in the company's Big Creek No. 1 plant. The machine is so designed that at a speed of 300 r.p.m. it delivers current at 11,000 volts, 50 cycles, and at a speed of 360 r.p.m., current is delivered at 12,000 volts, 60 cycles. The generator is complete with a direct connected exciter.

Civil Engineers Discuss Colorado River Problems

Federal Power Commission Engineer States Necessary Development Will Be Built by Private Capital Under Regulation

Problems of the development of the Colorado River were the main topic for discussion at the general session of the convention of the American Society of Civil Engineers held at Pasadena, Calif., June 18-21. All speakers urged a prompt development of the river, but there was considerable divergence of opinion as to what was the best site for the construction of a storage reservoir to satisfy flood control, irrigation and power demands.

President C. E. Grunsky introduced the subject with a plea for early action, pointing out the necessity of some definite arrangement with Mexico, on the part of the federal government, however, before any important development should be made. This was followed by motion pictures presented by E. C. LaRue of the U. S. Geological Survey which gave a graphic understanding of the region under discussion.

The main feature of the program was a paper by Col. Wm. Kelly, chief engineer of the Federal Power Commission, which was presented in his absence by his assistant, Major H. S. Bennion. Colonel Kelly presented a comprehensive analysis of the conditions and problems of the river and its tributary districts, reaching the conclusion that the development of the river should proceed in two stages, the first of which should consist of a storage reservoir in the lower basin at Mohave, with a possible later development at an upper canyon site. The scheme of development of the river should, in his opinion, provide for the following considerations:

- 1.—Losses from evaporation should be kept to a minimum.
- 2.—All available head should be used for power.
- 3.—Storage for regulation of flow should be located above the canyon section so that the equated flow can be used through the greatest practicable head.
- 4.—Storage in and below the canyon section should be limited to that necessary for regulation of flow for irrigation in the Lower Basin plus such quantity as is essential for immediate flood relief of existing developments in the Lower Basin. Failure to conform to this provision will mean ultimate duplication of storage capacity and consequent curtailment of irrigation due to unnecessary evaporation losses.

On account of the unsettled situation as between states and the fear of the states on the upper basin that irrigation waters and power developed through storage on the upper river will be absorbed by California and lands in Mexico, he suggested that development for the moment be confined to flood control and irrigation needs of the present developed lands on the lower river, to be met by a low dam at the Mohave site. However, if it is desired to pay for the expense of the dam through the development of power, he pointed out that an installation of 240,000 hp. would probably be justified at this point with a higher dam, which could be made at a cost of not more than \$150 per hp., a figure well under that at which power development is now being made in the southern section of California.

Power demands of southern California he estimates will have increased from a present figure of 522,860 in millions of kw-hr. to 1,175,790 by 1930 and 2,191,090 by 1945. Power development on the

Colorado River, which could probably be completed by 1932, should, he contended, not exceed an installed capacity of 300,000 kw. to meet the needs of the surrounding states. A larger development will ultimately be absorbed, but he stated that the risk of excessive carrying charges is not justifiable if the smaller development is feasible. The proposed dam at Boulder Canyon contemplated a development of 714,000 hp. which, he stated, would be an over-development of the river at the present time and at the same time would militate against the ultimate complete development of the river, curtailing the ultimate possible power development by 300,000 hp. and ultimate irrigation by about 50,000 acres. "If applied for under the Federal Water Power Act," stated Colonel Kelly, "the reclamation project would be refused a license until it was modified to conform to a full scheme of development."

The Glen Canyon site, on the other hand, which was condemned by the engineers of the U. S. Reclamation Service because of a poorly cemented sandstone foundation, was, according to Colonel Kelly, composed of rock which showed greater compressive strength under test than mass concrete and was therefore satisfactory as bedrock. The greatest objection to the site, in his opinion, was the fact that it was 135 miles from a railroad.

His remarks were concluded with the statement that "all development needed on the Colorado will be built by private capital under adequate federal and state regulation if the river is given over to development under the Federal Water Power Act." If the federal government decides to provide flood storage for the Lower Basin, on the other hand, he urged the Mohave development, so operated that the present low water

flow will not be increased beyond present irrigation needs. This should be followed at as early a date as possible with negotiations for a suitable treaty with Mexico and an agreement as to the water that will be provided for Mexican lands.

In the discussion which followed, E. C. LaRue urged that the development of the river begin with a reservoir at Glen Canyon. This was opposed by Louis C. Hill, consulting engineer of Los Angeles, on the ground that the bedrock material at this location was not satisfactory. A. P. Davis, former head of the U. S. Reclamation Service, defended the development of the river at the Boulder Canyon site on the ground of the increased water and power development which would result and the smaller factor of evaporation, which, he stated, would be excessive at the Mohave site. Wm. Mulholland, in charge of engineering work undertaken by the city of Los Angeles, pointed out the necessity of early development from the standpoint of the needs of the southern section of California and the necessity for agreeing upon a plan of action without waiting too long for the settlement of nice points of difference.

The financing of the project should not be placed as a burden upon power alone, according to F. H. Fowler of San Francisco, but should be prorated among the various interests on the basis of benefits received, supplemented, in case of excessive burdens, by aid from the government if necessary. He pointed to the example of the Sacramento and San Joaquin Rivers in showing how this had been worked out in practice. In general he favored Colonel Kelly's plan of developing the river in two stages, with a small storage reservoir on the lower river and a subsequent dam at the Glen Canyon site on the upper river.

Dangers of the All-American canal were pointed out by C. J. Allison, formerly connected with the Imperial Irrigation District, on account of the shifting sands along the route laid out.

No formal action was taken by the society.



To permit members of the Boulder, Colo., Horseshoe Pitchers' Association to enjoy their chosen sport at night, the city has provided electrical illumination for the court in the city park. Four 200-watt lamps with 16-in. reflectors make up the installation. The cost of lighting the court is about \$2.50 a month.

Washington Power Company Adopts Group Insurance

Effective as of July 1, The Washington Water Power Company and its subsidiary, the Spokane United Railways, of Spokane, Wash., will present life insurance policies to all employees who have been in their service over six months. These policies will be taken out under the group insurance plan without expense to the employees. Service from six months to one year entitles the employee to a \$500 policy, and this is increased \$100 a year until the maximum of \$1,000 has been reached. The insurance will be in force as long as the employee remains on the payroll. Under this plan about 428 employees of the Spokane United Railways will be covered, and approximately 500 employees of The Washington Water Power Company, which serves all that portion of eastern Washington and northern Idaho within a radius of 100 miles of Spokane. Arrangement has been made to the effect that, if seventy-five per cent of the employees so desire, an additional amount of insurance may be taken out, at the employees' expense, at the lower rate made possible by the group insurance. Administration of the insurance plan will be under the direction of W. H. Ude, director of the department of public relations of the power company.

This group insurance is in line with the policy of The Washington Water Power Company as regards the welfare of its employees. It has for a number of years operated a medical aid association, of which employees have practically full direction, that for a nominal charge of \$1 or \$2 a month entitles each employee to medical, surgical and hospital attention, including specialized work on eye, ear, nose and throat.

Southern Sierras Power Company Requests Temporary Rate Increase.—The Southern Sierras Power Company, which includes the Holton Power Company's system, has applied to the California Railroad Commission for authority to place in effect Aug. 1, 1924, temporary increased rates for electric energy. The rates requested would return to the company the increased cost of operation due to the production of power in steam plants to supplement its reduced hydroelectric production. The drought in southern California has greatly reduced the company's supply of hydroelectric power and steam plants will have to supply the necessary energy to fulfill the demand on the company's system. The company in applying for the increase, sets forth that the cost of operation for the 16 months ending April 30, 1925, will be approximately \$390,000 more than in ordinary years.

Water and Power Act Initiative Petitions Filed.—Initiative petitions for the California State Water and Power Act carrying 79,017 names, were filed with Secretary of State Frank C. Jordan on June 16. The petitions carried approximately 3,000 more names than were necessary. Following the filing of the petitions a definite announcement was made of the formation of the California State Water and Power League. The power league chairmen for the various parts of the state have been named and include the following: Frank McDonald,

vice-president of the San Francisco Building Trades Council; Mrs. Mollie Bloom Flagg, of Los Angeles; Mrs. Elizabeth Gerberding, Berkeley; and Seth R. Brown, Los Angeles, president of the State Federation of Labor. Rudolph Spreckels was chosen treasurer of the association, Louis Bartlett, former mayor of Berkeley, secretary, and Frank Hitchborn, campaign manager and publicity director.

Discuss National Home Lighting Campaign at Denver

The national home lighting campaign was launched in the Mountain region June 27-28 when K. A. McIntyre, representing the lighting educational committee and The Society for Electrical Development, visited Denver, Colo. Following conferences with the various executives who will supervise the campaign in that section, Mr. McIntyre addressed a meeting of Denver electrical men.

Arrangements were made by the Electrical Cooperative League of that city. Following the initial work outlined by Mr. McIntyre, plans were made for league representatives furthering the program in other parts of Colorado, Wyoming and New Mexico.

Penalty for Skagit Contractor Up to Seattle City Council

The Board of Public Works of Seattle, Wash., has left any assessment of penalty against R. C. Storrie & Company to the city council of that city. The Storrie company is the contractor on Seattle Skagit hydroelectric project and any penalty that would be assessed against the company would be because it has failed to complete construction on the Skagit tunnel by May 1. J. D. Blackwell has advised the Board of Public Works that he does not believe the tunnel will be completed before Aug. 1.

Northwest Association Elects President.—The Northwest Electric Light and Power Association, which held its annual convention at Gearhart-by-the-Sea, Ore., June 25-27, has elected as its new president, R. M. Boykin, manager of the southern division of the Puget Sound Power & Light Company, Seattle, Wash. The southern division of this company was formerly the North Coast Power Company of Portland, Ore., where Mr. Boykin has his headquarters.

Define Radiator at Commercial Section Session.—The sub-committee on commercial and domestic heating of the commercial section of the Pacific Coast Electrical Association, at its meeting at Coronado, Calif., June 18, decided that the proper definition of indirect heaters should be as follows: "Radiator is a term that is connected with appliances for steam and hot water heating and should be applied to heaters of similar appearance." On motion of A. J. Kercher, consulting engineer, this change in the report of the committee as originally printed, was passed and ordered to be a part of the report of the committee. G. L. Stannard was chairman of the committee and the other members were E. A. Wilcox, J. C. Douglas, P. P. Pine, H. V. Mooney, David Reed, J. T. Deppe, O. E. Sholders, O. B. Doerr, W. G. Tanner, and C. B. Merrick.

Books and Bulletins

WIRING FOR LIGHT AND POWER

By TERRELL CROFT. 551 pages; 552 illustrations. Cloth, 5 x 8 in. \$3.00. Published by McGraw-Hill Book Company, New York, N. Y.

In the fourth edition of this widely used text, which is a very complete explanation of the "National Electrical Code," a complete revision has been made to conform with the 1923 edition of the "Code." As a result of the rearrangement and important changes to prior regulations it is fortunate that such a text as has just been prepared by Mr. Croft is available at this time.

According to the author: "Almost anyone can install electrical wiring and apparatus so that they will work in some fashion or other. But to install them so that they will be electrically safe and mechanically secure involves the application of knowledge that has been gained accumulatively by hundreds of workers during many years of practice. Obviously, it is scarcely feasible for any one individual, unaided, to acquire from his own experience this requisite knowledge. Hence, if one is to follow the best methods in installing electrical equipment he must necessarily avail himself of the knowledge and experience obtained by his predecessors."

The accumulated knowledge and experience of men engaged in the installation of electrical wiring and apparatus have been incorporated in a set of rules and specifications known as "The National Electrical Code." Its principal function is to specify methods which will minimize fire hazards and yet at the same time be commercially feasible. This is a broad field to cover, with the result that the "Code" is almost entirely free from detailed explanations.

This book on the subject of wiring for light and power installations is a detailed explanation of the code. By means of clear cut drawings, descriptions, and elaborations the meaning of the code is clearly explained and there is little excuse for improper installations if this text is carefully followed.

The author has the happy faculty of explaining the subject clearly and such explanations with the aid of exceptionally clear cut drawings should make the text of considerable value to anyone engaged in wiring and installing electrical equipment.

From the standpoint of the reviewer the chapter on "Grounding" is especially valuable. The explanation of things which might occur under certain conditions is most complete.

The book is quite up-to-date as evidenced by the fact that instructions are given covering the methods of wiring for the protection of such important equipment as radio receiving stations.

The index is quite complete and a set of questions at the end of each chapter adds considerable value to the book when it is used as a text for a study of this most important branch of the electrical industry.

E. R. S.

Meetings

Competition Keen for Trophies at P.C.E.A. Convention

The golfing events of the Pacific Coast Electrical Association convention at Coronado, Calif., occupied the center of the platform on June 17, with the Chula Vista Country Club as a battleground. Several competitions were decided simultaneously over the 18-hole course under the direction of A. H. Biewener of the San Diego Consolidated Gas & Electric Company.

Much added enthusiasm was noted in this year's tournament due in part to the introduction of the Pelton cup which was offered for the first time by The Pelton Water Wheel Company. This trophy was won by R. A. Monroe of the Pacific Gas and Electric Company with a net score of 64. The Byllesby cup was won for the second time by W. L. Frost of the Southern California Edison Company with a net score of 69. R. A. Monroe also won the Jobbers' Central Station cup by reason of his low net score.

W. L. Frost was awarded the prize for the best gross score, he having turned in an 83 for the round. C. C. Hillis of the Electric Appliance Company, San Francisco, was second with 85 gross. In the match play against par competition, R. C. Smith of the Pelton Water Wheel Company was first, finishing three up on par. R. A. Monroe was second in this contest. The prizes for best net team score went to J. N. Addis and C. L. Hill who turned in a 145 net.

The kickers' handicap resulted in several ties, making it necessary for a putting competition on the ball room floor of Hotel del Coronado to settle the issue. In the playoff W. C. Smith of the General Electric Company won first prize and second place went to Ray Cavell.

Education Subject of Wyoming Convention Discussion

Cooperation with newspapers and the formation of utility courses in educational institutions, including comprehensive plans for tying in with the national home lighting campaign, were discussed at the annual convention of the Wyoming Utilities Association held at Casper, Wyo., June 23 and 24. At the convention the continued support of and plans to strengthen the jurisdiction of the state utilities commission were discussed under the direction of E. A. Bacon, manager of the Natrona Power Company, and retiring president of the association.

The largest number of guests in the history of the association were entertained with an extensive trip through the Salt Creek oil fields. The trip included a visit to the 25,000-kw. gas-fired generating plant being built by the Midwest Refining Company to electrify the field. Among the interesting addresses presented at the convention were those of C. C. Johnson of Denver, on commercial engineering by the Mountain States Telephone Company, and of F. P. Firman of the natural gas

division of the Ohio Oil Company, Casper.

The newly elected officers of the association are as follows: C. L. Titus, Wyoming state manager, Mountain States Telephone Company, Cheyenne, president; James A. Potts, manager, Rawlins Light & Power Company, first vice-president; James A. Withrow, manager Sheridan County Electric Company, second vice-president, and R. E. Richardson, manager Lovell Gas & Electric Company, treasurer. President Titus has appointed Charles St. John of Cheyenne as secretary.

Seattle and Tacoma Clubs Hold Joint Annual Picnic

All of the celebrated sports and amusements of summer time were enacted at the annual joint picnic of the Electric Club of Seattle and the Tacoma Electric Club held at the Farmers' picnic grounds at Enumclaw, Wash., on June 14. Men of the electrical fraternity from both cities, accompanied by their families, attended the picnic.

Following a picnic lunch at noon, a program of sports and amusements was presented to the picnickers. The sports committee was headed by Julius Hooper, secretary of the Seattle Electric Club, assisted by Harry J. Martin, president of the Seattle club; "Dick" Cole, of the Economy Fuse Company; Joe Wells of the Fobes Supply Company, and Charlie Smutz, of the Western Electric Company. Winners of all

COMING EVENTS

Pacific Coast Electrical Supply Jobbers' Association—

Quarterly Meeting—Del Monte, Calif.
July 24-26, 1924

Association of Electragists, International—

Annual Convention—West Baden Springs, Ind.
Sept. 29-Oct. 4, 1924.

of the field contests were awarded prizes which had been donated by the jobbers and dealers of Seattle and Tacoma.

Following the field events a ball game between the Seattle and the Tacoma clubs continued for ten innings until the winning team could be picked. The final score was 5 to 4 in favor of the Seattle club. A purse of \$50 was divided among the players on the winning team.

Annual Banquet by American Association of Engineers

The annual convention of the American Association of Engineers, which was held in San Francisco, Calif., June 11-13, was brought to a close by a banquet on the evening of June 13. Among the speakers were M. M. O'Shaughnessy, city engineer of San Francisco; Prof. Harris J. Ryan, president of the American Institute of Electrical Engineers; Prof. William F. Durand, nominated for the presidency of the American Society of Mechanical Engineers; Prof. C. D. Marks, president of the Joint Engineers Council of San Francisco and past president of the American Society of Civil Engineers; Frank L. Sizer, president of the Engineers' Club of San Francisco; and F. H. Newell, past president of the American Association of Engineers.

Arthur P. Davis, chief engineer and general manager of the East Bay Municipal Utility District, and former director of the United States Reclamation Service, delivered the address of the evening. C. E. Grunsky, president of the American Society of Civil Engineers, was scheduled to speak but was unable to be present. The outgoing president of the American Association of Engineers, Webster L. Benham, conducted the installation of his successor, Harold Almert, who in turn installed the newly elected vice-presidents and directors.

Portland Engineers Hold Annual Joint Picnic Meeting

Following the custom of former years, the Portland, Ore., sections of the A.I.E.E. and N.E.L.A. made the last meeting of the year an open meeting with picnic, song and dance, substituting for the usual thing.

Leaving Portland by autos about 5 p.m., a party of about 175 made up of members and their ladies traveled to the picnic ground at Hillsboro. On the way inspection was made of the 600-ft. steel tower and transmitting apparatus of the Federal Telegraph Company, and also a two-unit automatic 1,500-volt railway substation of the Oregon Electric Railway.

Announcement was made of the following duly elected officers of the Portland section of the A.I.E.E. for the coming year: Chairman, Harry P. Cramer; secretary-treasurer, L. W. Ross; executive committee, J. C. Henkle and L. R. Elder.



The contending ball clubs—Seattle standing and Tacoma sitting. The Seattle club won the game.

Manufacturer, Dealer and Jobber Activities

The Westinghouse Electric & Manufacturing Company has recently put on the market a new electric heater known as the Solar Glow, suitable for use as a room heater and as an auxiliary heater in extremely cold climates. The heater is a combination of both the convection and radiation type, for, in addition to heating through the utilization of air currents, radiation is effected from a buffed copper reflector placed around the heating element. The new heater has a cast iron frame, faced with statuary bronze and is finished on the sides and back in antique bronze so that it may be placed in any part of the room as well as inside a fireplace. The heating element, designed for operation on standard domestic circuits, consists of wire coils staggered in a one-piece porcelain unit and protected by a removable guard. The heat is regulated by a conveniently located switch, giving three different degrees of temperature control.

The General Electric Company is now furnishing a special grade of oil, known as M-6 oil, for use in lubricating their various types of demand meters, including also the clock mechanism of the type M-6 demand meter. It is especially adapted for use in such devices in preference to the use of ordinary clock or watch oil.

Allis-Chalmers Manufacturing Company has taken over the records, drawings, patterns, patents, jigs, fixtures and manufactured stock of the Worthington Pump & Machinery Corporation pertaining to and manufactured at the latter company's power and mining works at Cudahy, Wis. The Allis-Chalmers company will continue manufacture of the former Worthington line of crushing, cement, mining and creosoting machinery at its West Allis works. The Allis-Chalmers company has announced that special attention will be given to the prompt shipment of repair and spare part orders for the Worthington line taken over. The Worthington company will specialize on its other lines.

K. I. Dazey, northern California distributor of C-T electric trucks, with headquarters in San Francisco, has announced the addition of C. W. Hutton to his staff. Mr. Hutton is well known in the electrical field, having been in the employ of the General Electric Company for four years and having served as superintendent and assistant manager of the Sacramento division of the Pacific Gas and Electric Company. Later he acquired the agency of the General Vehicle Company of Long Island City, N. Y., for northern California. The business of this company was taken over during the war by the Walker Vehicle Company, and for the past few years Mr. Hutton has been selling Walker trucks in northern California.

The Safety Electric Products Company, Los Angeles, Calif., will soon move into its new building which will give it 40,000 sq. ft. additional floor space. The company will also shortly celebrate its fifth anniversary.

The Truscon Steel Company, Youngstown, Ohio, has announced a new type of steel pole in heights up to 50 ft. The pole is pressed from steel channels or I-beams and is so designed that no special equipment is required by the lineman. Pole steps are eliminated and spurs are unnecessary.

Trico Fuse Company, Milwaukee, Wis., has announced the appointment of James J. Noble as San Francisco, Calif., district representative for the company. Offices will be at 952 Folsom Street, that city, and stock will be carried for Pacific Coast shipments.

The Pacific Coast Steel Company, San Francisco, Calif., has just issued a new book on galvanized steel transmission towers and poles and on other galvanized steel structures. The book contains interesting illustrations and engineering data.

The Triumph Electric Company, Cincinnati, Ohio, has announced that the Miller-Selden Company, Detroit, Mich., has been appointed distributors in that section for Triumph motors.

Nathaniel Baldwin, Inc., Salt Lake City, Utah, has announced the establishment of a branch office at Chicago, Ill. Headquarters will be at 1524 South Western Avenue and the office will be in charge of J. L. Broadbent. Stock will be carried to take care of Middle Western requirements.

The Sangamo Electric Company, Springfield, Ill., has recently added to its line a new horizontal polyphase watt-hour meter that is said to be unusual in construction. In addition to other unique features it is stated that all parts of the new meter, with the exception of the register, are interchangeable with standard Sangamo Type H single-phase meters.

J. J. O'Leary has been appointed street lighting specialist for the mountain region of the Westinghouse Electric & Manufacturing Company. His new headquarters will be in Denver, Colo. He formerly served in the same capacity in the Chicago office of the company.

The Okonite Company, Passaic, N. J., has appointed J. L. Phillips manager of the San Francisco office of the company. Mr. Phillips was formerly manager of the Atlanta (Ga.) office. George N. Brown succeeds Mr. Phillips as manager of the office in Georgia.

The De La Vergne Machine Company of New York, N. Y., has completed arrangements whereby The Pelton Water Wheel Company of San Francisco will represent it on the Pacific Coast. A special representative will maintain headquarters in the general offices of the latter company. The De La Vergne Machine Company is the manufacturer of large oil engines and refrigerating machinery.

The Western Electric Company, New York City, has issued a catalog containing useful information on illumination and on the types of luminaires manufactured by the company.

The Electric Corporation, Los Angeles, has moved into new and larger quarters in that city. The new building of the company is six stories in height and gives greatly increased floor space.

The Angelus Electric Company, Los Angeles, Calif., has moved to new and larger quarters at 713 East Third Street, that city, where it is manufacturing a new type electric welder.

Peerless Light Company, Chicago, Ill., has announced the purchase of the Avalon Iron Works and the addition to the Peerless line of the products of the Avalon company.

The Rome Wire Company, Rome, N. Y., has announced the opening of a new office and warehouse at 1200 West Ninth Street, Cleveland, Ohio, under the charge of C. R. Evans, district manager.

Century Electric Company, St. Louis, Mo., has published form 533, which is devoted to the Century line of repulsion start induction single phase motors designed for use with refrigerating machines.

The Ward-Leonard Electric Company, Mount Vernon, N. Y., has issued a new catalog on motor starters and controllers. The booklet contains description and prices of a complete line of direct current motor control apparatus.

The P. A. Geier Company, Cleveland, Ohio, is offering several prizes to dealers' salesmen for sales of Royal vacuum cleaners.

The United Electric Company, Canton, Ohio, is conducting a prize contest for salesmen establishing the highest sales records on Ohio electric cleaners.

The Reynolds Electric Company, Chicago, Ill., has issued a new leaflet descriptive of its color hoods for sign lighting.



Cooperation shown at its highest point by the sturdy athletes of the Seattle and Tacoma electrical clubs. The race, the finish of which is shown above, was run during the annual joint picnic of the Electric Club of Seattle and the Tacoma Electric Club. Evidently the boys at the right won the hotly contested derby. The four individuals in the dusty center "also ran."

Personals

H. G. Butler, who has been engaged since 1921 in private practice as consulting engineer, has been made power supervisor under the California State Railroad Commission. He was in the service of the Railroad Commission



H. G. BUTLER

when he decided to practice his profession independently, having been assistant chief engineer of that body until June, 1918, when he was made power administrator with control over power companies operating in the north central part of the state. In 1920 he was given control of all power generated in California. Prior to his connection with the Railroad Commission, Mr. Butler was engaged in railroad and street railway construction work. In 1911 he went to Panama for the government and was in charge of the railroad yards there during the construction of the canal.

Charles F. Loweth, chief engineer of the Chicago, Milwaukee & St. Paul Railway and president of the American Society of Civil Engineers for the year 1923, is visiting the Pacific Coast.

H. A. Carmichael has been elected treasurer of the Westinghouse Electric International Company to succeed F. L. Townsend, who died some time ago.

J. F. Callbreath, secretary of the American Mining Congress, Washington, D. C., and **George A. Stahl**, Colorado representative on the board of governors of that organization, were guests at a recent meeting of the Sacramento Valley Electrical Society, Sacramento, Calif.

Charles A. Semrad, assistant general manager, and **Paul Lee**, legal department, both of the Public Service Company of Colorado, Denver, Colo., are spending some time at Rochester, Minn.

Fay Woodmansee, president of the Electrical Engineers' Equipment Company of Chicago, Ill., has been visiting the Pacific Coast in the interests of his firm.

O. L. Dickenson, gas superintendent of the Fresno division of the Pacific Gas and Electric Company, San Francisco, Calif., was a recent San Francisco visitor.

George A. Hughes, president of the Edison Electric Appliance Company, Chicago, Ill., attended the annual convention of the Pacific Coast Electrical Association at Coronado, Calif. Mr. Hughes also visited San Francisco on his way to the convention of the Northwest Electric Light and Power Association at Gearhart, Ore.

C. K. Wehn, in charge of sales of Blaw-Knox standard steel buildings in the Pittsburgh, Pa., district, has in addition to his present capacity been made assistant sales manager of the standard building department.

Harold Willis, president of the Sacramento Valley Electrical Society, Sacramento, Calif., was chosen to represent that organization at the Pacific Coast Electrical Association convention at Coronado, Calif., June 16-20.

A. F. Maccallum, Rocky Mountain district service manager of the Westinghouse Electric & Manufacturing Company with headquarters in Denver, Colo., recently visited Salt Lake City, Utah.

H. D. Randall, newly elected chairman of the Electrical Cooperative League in Denver, Colo., is attending a meeting of district managers of the General Electric Company at Association Island, N. Y. On his return he expects to stop in several Eastern cities to go over the activities of the electrical leagues organized there.

W. J. Canada, engineering director of the National Electric Light Association, New York City, attended the annual convention of the Pacific Coast Electrical Association at Coronado, Calif. He also spent a few days in San Francisco before leaving for the convention of the Northwest Electric Light and Power Association at Gearhart, Ore.

E. A. Phinney, president of the Jefferson County Power & Light Company, Golden, Colo., and prominent in utility circles of the mountain region, has been appointed convention chairman for the annual meeting of the Rocky Mountain division of the National Electric Light Association and Colorado Public Service Association at Glenwood Springs, Colo., Sept. 15-17.

W. A. Fouhy, traveling plant inspector for the Western Electric Company, with headquarters in New York City, has been making an inspection trip through Western territory in the interests of his firm.

H. H. Kerr, electrical superintendent of the Public Service Company of Colorado, addressed a meeting of the Colorado section of the American Society of Civil Engineers in Denver, June 23, on the new Valmont power plant which his company is constructing near Boulder, Colo.

Lewis A. Lewis, sales manager, and his assistant, **Ross B. McElroy**, of The Washington Water Power Company, Spokane, Wash., attended the convention of the Northwest Electric Light and Power Association at Gearhart, Ore., June 25-27.

S. B. Gregory, California representative of the Arrow Electric Company, Hartford, Conn., has left for an extended trip to the factory. He will be gone several weeks.

Kirby Strickland, of the United States Steel Products Company, Pittsburgh, Pa., was recently in San Francisco, Calif.

Ray W. Turnbull, assistant Pacific Coast sales manager of the Edison Electric Appliance Company, Portland, Ore., spent the week of June 9 in Spokane, largely for the purpose of aiding The Washington Water Power Company in the organization of their campaign on Hotpoint Hughes electric ranges. Mr. Turnbull gave a series of talks to the sales department of the power company, which were conspicuous not only for the thorough technique of sales that was displayed throughout the series, but for the strong appeal to the salesmen who heard them. He concluded his visit with a dinner served at the Davenport Hotel the evening of June 13, attended by the sales department of The Washington Water Power Company and other guests.

Frederick Maples, formerly power director of the Long Island section of the Pennsylvania Railroad and until recently connected with Hubbard & Company, Pittsburgh, Pa., has been made manager of the steel pole department of the Truscon Steel Company, Youngstown, Ohio.

Rollin M. Smith, formerly connected with the department of electricity of Los Angeles, Calif., has been appointed electrical safety engineer for the Electrical Contractors' and Dealers' Association of that city. Mr. Smith was born at Winona, Minn., in 1884. In 1906 he entered the employ of Woodill & Hulse, Los Angeles, as an electrician. For two years he was electrician for the Coulter Dry Goods Store, and later, as foreman, had charge of the installation of the generators and a 39-ft. switchboard in Hamburgers' Dry Goods Store. He was made electrical inspector in the department of electricity of the City of Los Angeles in 1909. He was field inspector for the next twelve years, at the end of which time he became assistant to H. N. Beecher, chief electrical inspector, and was assigned to engineering work in the office of the department of electricity. Mr. Smith's practical experience, his knowledge of the technical



ROLLIN M. SMITH

phases of the industry, and his wide acquaintance among the electrical fraternity in Los Angeles, make him particularly well equipped to handle the duties of his new position. Mr. Smith is the author of the Los Angeles Wireman's Handbook, a second edition of which is being planned as part of the program of the association to give safe electrical service to the city.

D. C. Stewart, Pacific Gas and Electric Company district superintendent of electric lines and substations in the Nevada district, with headquarters in Grass Valley, Calif., recently made a brief visit to San Francisco, Calif.

Joseph Thieben, general manager, Panama Lamp & Commercial Company, San Francisco, Calif., has returned from an extended trip to the Northwest. During the journey Mr. Thieben visited Portland, Ore., Tacoma, Seattle and Spokane, Wash.

Clifford M. Holland, engineer in charge of the construction of the vehicular tunnel under the Hudson River in New York, was a recent visitor to San Francisco, Calif., where he attended the annual convention of the American Society of Civil Engineers.

A. C. Cornell, Rocky Mountain district manager of the Western Electric Company, was a visitor at the Salt Lake branch of his company recently and on his return to Denver stopped at Casper for the annual convention of the Wyoming Public Utilities Association.

Kenneth A. McIntyre, of the Society for Electrical Development, New York City, recently visited Denver, Colo., where he spoke before the Electrical Cooperative League of Denver. Mr. McIntyre is also representing the Lighting Educational Committee.

J. McKeen Cattell, editor of Scientific American and the Scientific Monthly, attended the convention of the Pacific Coast section of the Society for the Advancement of Science at San Francisco, Calif.

U. L. McNulty, electrical engineer of Fresno, Calif., was a recent visitor to San Francisco, Calif.

Lyle G. Fear, recently appointed manager of the Portland (Ore.) branch office of the Westinghouse Electric & Manufacturing Company, has been in the service of that organization for about fifteen years, having entered the apprentice course at its East Pittsburgh Works in 1909. Later he was employed on the sales forces of the

Samuel Kahn, vice-president and general manager of the Western States Gas & Electric Company, Stockton, Calif., recently spent some time in San Francisco on business for his company.

George A. Campbell, of the Reno Light & Power Company, Reno, Nev., was a recent visitor to San Francisco.

Grant Call, manager of the heavy duty department of the Edison Electric Appliance Company, Chicago, Ill., was a recent visitor to San Francisco, Calif., stopping over there on his way to the convention of the Northwest Electric Light and Power Association at Gearhart, Ore.

F. G. Broiles, of the International Electric Company, Los Angeles, Calif., is on an extended trip to Eastern cities.

Preston S. Millar, president of the Electrical Testing Laboratories, New York City, recently spent some time in San Francisco, Calif.

Ward Harrison, illumination engineer of the National Lamp Works of the General Electric Company, Nela Park, was one of the chief speakers at the convention of National Office Building Owners' and Managers' Association held at Colorado Springs, Colo., June 23-25. Before returning to the East Mr. and Mrs. Harrison made an automobile tour of the Colorado mountain region.

H. L. Jackman, vice-president of the Western States Gas & Electric Company, Eureka, Calif., recently spent a few days in San Francisco on business for his company.

J. L. Stannard, chief engineer of the Lake Cushman power project under development by the city of Tacoma, Wash., accompanied by **A. F. Darland**, superintendent of the electrical department, has gone to Milwaukee, Wis., to confer with the Allis-Chalmers Company regarding the fabrication of the generators and turbines for the Lake Cushman plant. The Allis-Chalmers Company holds the \$600,000 contract for furnishing machinery for the plant.

E. B. Merriam, executive engineer of the switchboard department of the General Electric Company, Schenectady, N. Y., has been elected a member of the board of managers of the American Institute of Electrical Engineers. This is the national governing body of the Institute. Mr. Merriam's election is for a term of four years, beginning Aug. 1. He has been a member of the Institute for 18 years and is a past chairman of the Schenectady section, having served on nearly all the committees of the section.

B. M. Tassie, Pacific Coast manager of the Manning-Bowman Company with headquarters in San Francisco, Calif., recently spent a few weeks in Los Angeles and southern California going over the territory with local representatives of the Western Electric Company.

A. F. Bedorf, supervisor, system regulation division, equipment and tests department, Duquesne Light Company, Pittsburgh, Pa., recently spent several weeks in Los Angeles and southern California.

M. Hayashi, chief designing engineer of the Daido Electric Power Company, and director and chief civil engineer of the Gifu Electric Power Company, and **R. Koyama**, chief engineer of the Yahagi Hydroelectric Company, both of Tokyo, Japan, arrived recently in San Francisco. They plan to spend about a month on the Pacific Coast visiting various hydroelectric plants.

W. R. Putnam, vice-president and general manager of the Idaho Power Company, Boise, Idaho, has been appointed chairman of the commercial section of the National Electric Light Association. Mr. Putnam is well known in the electrical field and has taken an active part in the affairs of the industry, particularly in the Northwest. He has served as president of the Northwest Electric Light and Power Association and acted as chairman of the commercial section of the national organization for the 1922-23 term. Early in his career Mr. Putnam was manager of



W. R. PUTNAM

the Red Wing Gas & Electric Company, Red Wing, Minn., and prior to his connection with the Idaho Power Company was commercial and sales manager for the Utah Power & Light Company, Salt Lake City, Utah.

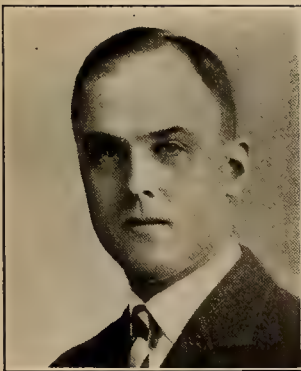
A. Carlson, of the treasurer's office of the Western Union Telegraph Company, New York City, recently spent several days in San Francisco, Calif., on business for the company.

Obituary

H. M. Swetland, president of the United Publishers Corporation, which publishes Iron Age, Dry Goods Economist, Automotive Industries and other important trade journals, died at his home in Upper Montclair, N. J., June 15. At one time he was owner of Power and of Engineering and Mining Journal, as it was then called, both now owned by the McGraw-Hill Company. Mr. Swetland was one of the pioneers of modern industrial publishing, and was at the time of his death president of the National Publishers' Association, the Class Journal Company, and the Federal Printing Company.

Edward D. O'Brien, assistant superintendent of public utilities, Seattle, Wash., died in Seattle recently, at the age of 51 years. Mr. O'Brien had been in the service of the city since March 1, 1909.

Frank W. Larson, of the Spokane Electrical Furnishing Company, died June 18 following a short illness. Mr. Larson has been prominent among the electrical fraternity for several years.



LYLE G. FEAR

company's offices in Butte, Mont., and Spokane, Wash. In 1912 he became affiliated with the Portland branch. He has been in that office as a salesman since that time, with the exception of fifteen months when he served during the World War as a lieutenant in the navy on overseas duty. Mr. Fear is a graduate of Yale University with the class of 1908.

Trade Outlook

San Francisco

In San Francisco business circles the feeling seems to prevail that the final low level for the year has been reached and a fairly good fall trade may be anticipated. Conditions in the wholesale trade show improvement. Reports from the dry goods houses are to the effect that while some influence of the drought and hoof and mouth disease has been felt, business is only slightly under that for last year. It is felt that retailers are keeping minimum stocks and buying only for immediate needs. Improvement is indicated in wholesale hardware lines, although conditions in general are quiet. The drought in the agricultural sections has had an unfavorable effect on the movement of new farm implements. Department stores and furniture houses report increase in volume over last year, as do several of the large meat packers, the latter adding that they find it necessary to keep after collections.

Bank clearings for the month of May were slightly under those for the same period last year, but building permits showed an increase. Interest rates have declined. The re-discount rate in force at the Federal Reserve Bank is 4 per cent.

There is a quiet feeling of confidence that business in general is on a sound basis.

Salt Lake City

The most important event in industrial circles during the past month in this section was the formal opening of the Columbia Steel Corporation's plant at Ironton, near Provo, Utah, on June 7. This new industry is looked upon as marking the beginning of an era of increased business activity, the effect of which will be more noticeable as its operations become more extensive.

Increased activity in out-of-door pursuits has reduced the surplus of practically all classes of seasonal labor. Throughout the larger part of this territory, mining and industrial concerns are running steadily, while the demand for farm labor is increasing.

Badly needed rain has improved the agricultural situation, although in some districts it is predicted that crops will probably be somewhat shorter than normal, due to early season dryness.

A rather extensive program of highway construction is under way in some parts of the territory. Building activity in Salt Lake City and other larger towns continues unabated.

In all branches of the electrical industry there seems to be no lack of activity.

Collections and credits are fair and improving.

Los Angeles

With the advent of warm weather in Los Angeles during the past few weeks, the sale of electrical fans has increased, thus aiding in maintaining a fairly good electrical retail business, while at the same time it has caused a slowing up

in the sale of radio apparatus. However, business of the first two weeks of June shows a decided improvement over the last two weeks in May and is about on a par with that of the same period a year ago. The wholesale trade, while not up to that of last year, due to the decline in building, shows signs of improvement and is better than at this time last month. Manufacturers report very good business prevailing in their lines.

Owing to the extremely dry weather during the past winter, there has been a 25 per cent reduction in use of power on the lines of the Southern California Edison Company, which furnishes most of the power for Los Angeles and the surrounding territory, and this will slow up retail appliance business to some extent.

While building permits took a decided drop during the first two weeks in June this year as compared with those of last year, bank clearings show a decrease of only about 9 per cent for this period, which is a fair index of business as a whole in this section.

Portland

There appears to be no cause for great alarm over the trend of general business in this district. During the past few weeks retail trade has been somewhat dull, but usually this is so at this time of year. It is felt that Portland's growth has been solid with little or no inflation so that it has little to fear from the present situation.

Portland's water-borne commerce is continuing to show gains. During May of this year a substantial increase was shown.

Enough rain has fallen during the past two weeks to relieve, in a large measure, the agricultural situation. Orchardists report good prospects for the year's crop and the fire hazard has been much reduced. More rain is needed.

Lumber production is now slightly above both new business and shipments. Prices have declined but there has been no apparent reduction in the number of men employed.

Building construction is going ahead, and, together with a rather large road construction program, is providing employment for a large number of workers.

Central stations are pushing electric ranges with moderate success.

Denver

The business outlook in virtually all lines continues to be regarded with optimism although buying is still slow. Some increase in wool transactions in Colorado and Wyoming has been noted. Prices are low on account of inactive mills but the outlook is good. The supply of cattle at the local stockyards is reported meager, with prices steady. The local oil market shows improved strength.

Building continues without let-up, and residential construction is still leading on account of the eagerness of home-builders to have as much work as pos-

sible completed in month Pacific opening of schools. (Consolidated Electric) starting on the General Electric Company's \$175,000 broadcast station in Denver, and announce that has been made that work would be completed at once a 10-story hotel to be erected in Denver.

Renewed activity is being manifested in several of the mining camps, especially at Cripple Creek, where some of the best ore in the history of the camp has been found.

Considerable activity in appliance sales has been noted on account of interest in gifts for June brides.

Seattle

Retail and wholesale trades reopening has been spotted throughout the spring and now continues to evidence starts and halts. The general volume, however, has been satisfactory, with conservative purchasing for future needs continuing to rule the wholesale trade.

Building, particularly in residence construction, is still very active. About seventy-nine new homes, averaging in cost \$4,000 each, were started in Seattle the second week in June. Many commercial structures have been begun. Influx of new industries, claimed to be at the rate of about ten a month, has created a heavy demand for rental structures, especially of the light manufacturing and factory type.

Lumber manufacturing still continues very unsatisfactory, with the market weak and inclining downward. Logging is at a standstill in many sections of Puget Sound, resulting in a certain amount of unemployment.

Jobbers and dealers in the electrical industry report sales of smaller appliances showing a decided increase since the first of June, the gain being particularly noticeable in household devices, such as percolators, toaster stoves, vacuum cleaners, etc.

Along construction lines, contractors report there is a slight increase of business, with prices fair, and collections from fair to good. Stocks in all lines are adequate, with shipments coming through regularly.

Spokane

An exceptionally heavy rain, general throughout the Inland empire, followed by occasional showers, has averted the threatened damage to the wheat crop, with the direct result of restoring confidence and optimism in business circles. A yield of at least 50 per cent of last year's heavy wheat crop is anticipated. With a stiffening market, the prospects for the wheat growers are very good.

Retail sales in Spokane and the territory responded to the better outlook for crops. The Washington Water Power Company ended a successful campaign on electric ranges May 17, but in view of the improved general conditions still another campaign was launched June 16.

The deliveries of live stock to Spokane stockyards have increased this month, and good prices are quoted, thus enabling the packers to maintain a normal output.

Mining conditions in British Columbia and northern Idaho are excellent. Three of the largest operators have recently declared substantial dividends, and one of the largest companies in British Columbia has begun an extensive construction program.

July 1, 1924

Publication

D. C. Stearns
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Journal of Electricity

Cents a Copy

July 15, 1924

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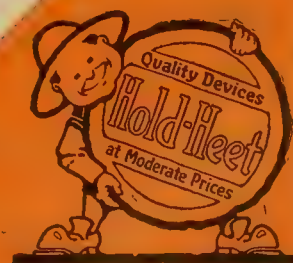
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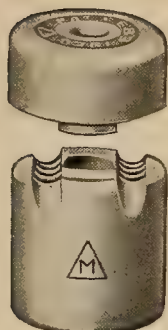
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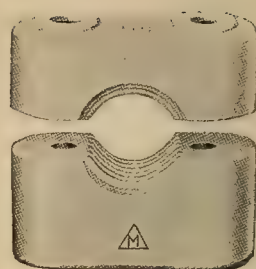


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The Industry's Opportunity

MORE vital to the electrical industry of the West than public relations, more vital than future water power developments is the question of government ownership. In Washington and in California a battle is being waged, the outcome of which will affect the industry of the entire nation. If the people of these states should turn over the fruits of thirty years' work on the part of private initiative and enterprise to the politicians simply because a misinformed group of propagandists paint for them a picture of Utopia, then the entering wedge of a movement that threatens the business fabric of this country will have been inserted.

The electrical industry of California and Washington will find that its entire personnel will be needed in combating the ill effects of the arguments of the proponents of vicious and inimical legislation in these two states. If John Smith, meter reader, or James Brown, district manager, cannot argue convincingly with their friends on the subject, then they are useless weapons in the fight.

The Journal of Electricity, through its editorial and news columns, is keeping the industry in touch with all phases of the state ownership movements in Washington and California and in other sections of the country as well. It is also presenting the many arguments against the movement. But if the industry does not take advantage of the service we are offering, then our work is wasted. If it does, then we feel that ours is a work worth while.

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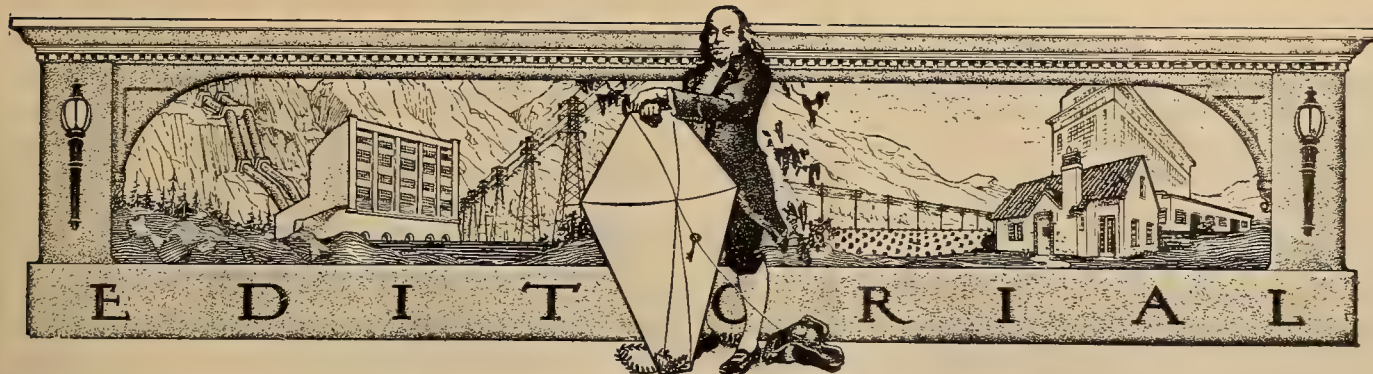
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Anent California's Water and Power Shortage

THE drought in California—the worst in the history of the state—finds the electric utilities faced with an unique and at the same time serious set of conditions. With rainfall but thirty per cent of normal, the deficient water supply has resulted in a power shortage which has necessitated a 25 per cent curtailment in the southern section of the state. Proponents of municipal and state ownership are taking this opportunity to capitalize upon the misfortunes of the privately owned companies and are blaming them for an act of God. The one bright ray in the whole situation is the spirit of cooperation which has been engendered between the utilities themselves, the various civic organizations of the state and the public at large.

However, the public cannot and will not blame the utilities for lack of foresight. The Southern California Edison Company, one of the utilities most seriously affected by the shortage and one which is exerting every effort to cope with the emergency, has been spending between twenty and thirty millions annually to keep pace with the demands of the rapidly growing territory which it serves. The company cannot achieve the impossible. There is a serious shortage of water for its hydro plants and the supply will not be replenished before November. Right here it might be well to point out the efforts that other utilities and the public in general are making to assist the Edison company. The interconnected system of the state is bringing in power from districts where the supply is more than sufficient to meet the demands. Consumers, notably the Bureau of Power and Light of the city of Los Angeles, which is the largest single consumer on the Edison system, are doing their part in curtailing their demands. Chambers of Commerce, merchants' associations and like organizations have entered into the spirit of the occasion and are urging cooperation. For example, we quote the following from a statement issued by the Santa Ana Merchants' Association:

"We face a situation, and must either conserve what we have or be without. The whole story giving the reasons why has been broadcast in the papers and yet consumers gave no cooperation until drastic action was resorted to (pulling of plugs and cutting off switches completely in some cases). Cut out all window lights, all sign, billboard and decorative lighting, and in addition 25 per cent of normal consumption. Let's give 100 per cent cooperation while the emergency lasts and in the meantime perhaps we can consider a way out."

Full cooperation between the companies, their consumers and the public generally will undoubtedly tide the utilities over the present situation. However, certain conditions must be considered with a view of forestalling any such future emergency. There is the Colorado River flowing idly into the Gulf of California with enough potential power available to meet more than the present demands of the entire State of California. Four years ago the Edison company sought a permit to develop this stream and guaranteed delivery of the first block of power in 1923. Had this been allowed there would have been no power shortage this year. The California Railroad Commission is partly to blame because of its attitude in not allowing more steam reserve equipment to guarantee the users of electricity continuous and ample service regardless of winter rains. It is regrettable that in a state where electricity plays such an important role in the industrial, domestic and economic life a power shortage such as faces the utilities at present should occur, but until either the Colorado River is developed or until the Railroad Commission adopts a more liberal attitude in the matter of steam reserve, this great commonwealth will be threatened with a recurrence of the embarrassing situation it faces today.

Pacific Coast Will Be Scene of 1925 N.E.L.A. Convention

NOW that the convention period is over, with those of the Pacific Coast Electrical Association at Coronado, Calif., the Northwest Electric Light and Power Association at Gearhart, Ore., and the convention of conventions, the National Electric Light Association at Atlantic City no more than a delightful memory, the electrical industry is beginning to speculate upon the time and the place for the national convention in 1925.

This much we may tell—the national convention will be held on the Pacific Coast, and the time will be the week beginning June 15. Since the president-elect is Franklin T. Griffith, president of the Portland Electric Power Company, of Portland, Ore., interest naturally attaches to the possibility of holding the convention in Mr. Griffith's home town. The selection of the place is regarded as the prerogative of the president, and sentiment would lead Mr. Griffith toward Portland, provided, of course, that Portland can offer the facilities required for so large and discriminating a group of men.

It is a big job—that of entertaining the membership of the N.E.L.A. It is said that there were some 6,000 or more delegates at Atlantic City,

enough people to make a fair sized town in itself. Of course, the attendance in the far West would not be nearly so large, perhaps in the neighborhood of 3,000 people, yet even this represents a problem of no small magnitude for any but the largest cities.

At the Coronado convention, an invitation was extended to the N.E.L.A. by the Pacific Coast Electrical Association to hold its next convention in San Francisco. In the invitation, a guarantee of no less than 2,000 registrations was offered from the Pacific Coast states. San Francisco has become noted as a convention city and her hotel facilities, auditorium, and other advantages are too well known to require further elucidation here.

At any rate, whether in Portland or San Francisco, it goes without saying that the electrical industry of the West will take off its coat, roll up its sleeves, and offer to its Eastern guests something truly Western in the way of a welcome. The problem in selecting the place is to provide the proper facilities for taking care of our guests, and all other considerations are secondary.

Group Insurance as a Stimulant to Organization Loyalty

AS compared with other industries the public utilities have remarkably stable and loyal organizations. From the point of view of the outsider this fact furnishes food for thought, and the impression is that the work of the individual in the large organization producing and selling electrical energy is apt to become so highly specialized that he becomes interested in his job to the exclusion of all idea of seeking other employment. So far as we know, the average manual or clerical worker in the utility is apt to receive a rate of pay that is comparable to that in other lines of work. Inspiring personal loyalty among the employees of a large utility must be a very important factor in promoting stability but this is a matter which it is difficult for the customer to gage, and frequently, even to detect. Loyalty in the old days was usually realized through the lovable human characteristics of some one, or possibly of a few important executives. In this respect conditions have changed; the executive may be just as human, just as lovable, but because of the tremendous growth in organizations, the individual has lost the opportunity of having contact with him. At this point the executive becomes merely the symbol of the company, and the employee becomes more interested in the company as a rather vague entity whose mouthpiece and arm is the executive. To be explicit, the employee then feels that when the executive speaks or acts, he does it not as an individual, but as the agent of the company. In other words, the human bond has been weakened. Thus it would appear to the outsider. And this seems to be inconsistent with the fact that such organizations are conspicuously stable.

Utilities have taken many steps to meet this change in conditions. In a recent issue there was a reference to the group insurance just taken out by The Washington Water Power Company of Spokane, in favor of all of its employees. This company has

for years operated a medical aid association for the benefit of its employees. Actually the employees have full direction of this association, and for a nominal charge of \$1 or \$2 per month, each employee is entitled to medical, surgical, and hospital attention. In addition to this, the company makes it possible for employees to purchase on remarkably easy terms company securities. Moreover, the fact that an employee owns securities is not used as a pretext for withholding salary increases.

Now The Washington Water Power Company has taken out group insurance for every company employee, effective July 1. The employee incurs no expense whatever. Furthermore it is arranged that if 75 per cent of the employees so desire, an additional amount of insurance can be taken out at the employee's expense, at the lower rate made possible by the group insurance. This is a striking evidence of the company's interest in its employees as individuals. The company now protects its employees' health, encourages the habit of saving, and furnishes protection for their dependents. Such policies are wisely calculated to arouse a strong feeling of personal loyalty, and it is difficult to imagine how the fair-minded employee could resist their appeal. The outsider can readily understand the effect of such policies upon the organization.

We believe that The Washington Water Power Company has furnished in this latest feature an admirable example that can well be followed by other utilities. Under any conditions, a loyal, permanent, working organization is a desirable asset to any corporation, but with the present situation of unrestrained political interference with utilities, a loyal organization, convinced of the fairness and honesty of its company, cannot but serve as the strongest arm of defense.

Private Initiative Receives Recognition

WHILE the electrical industry is endeavoring most conscientiously to keep its skirts clear of politics, it should take pride in the fact that it was deemed sufficiently important by the "student of economy" who drew up the Republican platform to be included with the League of Nations, the tariff, taxes and disarmament. One entire paragraph in the platform is given over to an appreciation of the private initiative and enterprise which made possible the highly developed and highly successful private utilities of this country. Recognizing that the basis of America's greatness and growth is the genius of individual enterprise and effort, the platform reads:

"American industry should not be compelled to struggle against government competition. The right of the government to regulate, supervise and control public utilities we believe should be strengthened, but we are firmly opposed to the nationalization or government ownership of public utilities." The following quotation regarding water power development may have some bearing on Muscle Shoals or the Colorado; at any rate it should prove interesting to the industry. The platform continues, "The federal

water power act establishes a national water-power policy, and the way has thereby been opened to the greatest water power development in history under conditions which preserve initiative of our people yet protect the public interests."

We are not sufficiently conceited to believe that the plank in the Republican platform referred to above will have any considerable bearing upon the outcome of the election but we are inclined to become elated when we realize that the industry has so progressed as to be recognized by one of the major political parties.

The Psychology of Silence

"IF you have a motto over your desk, 'Silence is Golden,' tear it down; substitute in its place, 'Tell the World,'" said George Hughes, president of the Edison Electric Appliance Company of Chicago at the public relations conference of the Northwest Electric Light and Power Association.

Herein lies the germ of the whole public relations problem, the necessity for informing the public, the necessity for turning the light of knowledge upon every phase of central station ownership, management and operation, so that the prejudice, envy, and hatred begotten of ignorance may be banished from the electrical industry.

Napoleon himself said that the best defense was an attack, and had his public relations department functioned as efficiently as his general staff, his might have been a different ending.

There is a distinct psychology of silence. "Silence gives consent," says the old maxim. It is regarded as a tacit admission that criticism and attacks are justified. On the other hand, what is more convincing, what gains more respect than an out-in-the-open, manly presentation of the case of the customer-owned public utilities, who have in very truth every fact, figure and record of achievement back of the assertion that privately owned state-regulated power development means service to the public in the fullest measure of the word, while socialization means financial disaster, indifferent service, a greater and greater tax burden, and an arrested development of the natural resources of our country.

"Tell the world," said Mr. Hughes. It is good advice.

A Way to Accomplish Nothing on the Colorado

THE other day a group of the most prominent civil engineers in the country, gathered together in convention at Pasadena, discussed the subject of what should be done with the Colorado River. On one fact they were agreed—that the development should be immediate; but for the most part they concerned themselves with refuting each other's arguments as to what was the best site at which that development should take place.

The problem of site selection is an important one and the facts and figures presented by the civil

engineers are a valuable contribution to knowledge on this subject, but the layman is left with the wonderment as to whether the discussion was really a pertinent one or not. After all, the first question is not where, but how the development is going to be accomplished. After it has been decided what subdivision of the water should be made between states and between this country and Mexico and the agency has been chosen which is to be permitted to undertake this work, it will then be a matter of importance to select the best site on the river for initial development.

It would be rather more to the point if organizations such as the American Society of Civil Engineers were to make a definite recommendation as to the appointment of a Colorado River Commission or some other body functioning under a National Department of Public Works who should have the right to settle questions of policy and actually go ahead with a plan of action. So long as testimony on the river must be submitted to congressional committees and so long as those interested in the river continue to discuss their points of difference rather than to formulate a constructive plan, nothing much will be accomplished. Further analysis of the claims and supporting data will be desirable, but this should be done before a capable court or tribunal—the urgent need now is for a suitably vested authority to try the case.

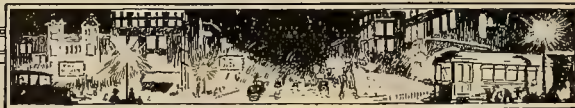
Individual Acts Often Affect Large Groups

TO philosophize for a moment, we, collectively, are a queer lot. Each of us lives in a little world of his own, and is more or less obsessed with the importance of his own little doings, his own little affairs, and his own little financial status. We can see but a short distance ahead of our noses, and are all too prone to sacrifice principles for some small temporary advantage, without realizing that eventually we are bound to defeat our own ends.

We have heard members of the electrical industry reason thus and so, "What difference would political ownership make to me? Apparatus and supplies must be bought in any case. Perhaps through the regulations under which the state must buy, provided that the order must go to the lowest bidder, I might have an advantage that I do not possess under private ownership."

A manufacturer's representative, possibly in order to gain the good will of certain government officials, recently took the stump in favor of political ownership in a district already committed to municipal ownership and operation of public utilities. If it represented the expression of his honest opinion, there can be no quarrel with his action, except that his principals become tarred with the same brush. If we were manufacturers, we should be most interested in the actions of our agents, be they political, social, or business. In fact, all three are so closely interrelated that it is difficult to know where one stops and the others commence.

CURRENT COMMENT



With the exception of one or two radical papers in western Washington and those in Seattle and Tacoma, the press of Washington is giving little or no support to the proposed Bone Bill. Especially in the rural districts is the feeling against the measure pronounced and in such sections the opinion is prevalent that Seattle is aiming to unload upon the other portions of the state her highly unprofitable Skagit River development. "The farmer is again the goat," declares the Shelton (Wash.) Mason County Journal in an editorial which continues:

The Bone Bill is now shorn of its last vestige of decency and stands revealed, to all who can read, as a plain bit of highway robbery against the people of the state as well as those of Mason County. It is at best a bit of socialism which has for its real object the advancement of state ownership.

When it is realized that all the cities, and most of the towns and counties are already bonded up to their legal limit—a legacy to be handed down to their children's children—the folly of even dreaming of "free power" or of the state engaging in any other great public service is apparent, that is, if the taxpayers are dreaming of lowering their taxes.

The Ellensburg (Wash.) Record views the measure in the same light and comments as follows:

Every cent of Seattle property taken off the tax rolls means a larger portion of the burden must be met by the farmers and the people of eastern Washington. The passage of the Bone Bill might be a good thing for the people of Seattle, but even that is doubtful. However, there is no doubt but that the passage of that bill would increase the taxes of every county in eastern Washington, because of the enormous amount of property taken off the tax roll in Seattle and Tacoma.

Similarly, the Colfax (Wash.) Gazette cannot see any benefits to be derived from a program of political ownership and operation. This paper states:

Proponents of the Bone-Erickson bills would bond the state for approximately three hundred million dollars, would take all electric light and power properties off the tax rolls and turn them over to political management and operation, all upon vague and indefinite promises of reducing the price of the cheapest item upon the family budget.

nal of Electricity for June 15, makes an assertion that is not supported by the facts. He states: "The present alignment of the aqueduct was the most economical location for the building of the water way, regardless of the fact that it did improve the power possibilities incidental to the project."

Mr. Shuey should read up on this subject. The facts are that from Haiwee Reservoir to the Elizabeth tunnel, about 130 miles, the aqueduct has a capacity of 420 sec.-ft. The tunnel, designed to supply water for peak power plant capacity, carries 1,000 sec.-ft., and the Fairmont Reservoir was necessary to provide regulatory storage. The Fairmont Reservoir was largely paid for from power bond funds. It was the only feasible reservoir site along the north face of the mountains, and it, as an essential element of the proposed power development, dictated the location, and its elevation the gradient, of the aqueduct above that point. This reservoir site also dictated the location and the length of the Elizabeth tunnel, which is at least 75 ft. below the level of the most economical tunnel location, considering the limitations of canal gradient from Haiwee.

Had it not been for the plans for power development the Elizabeth tunnel would have been located at least 75 ft. higher, and with less than half the area, its shorter length would have reduced the cost by nearly a million dollars alone.

The Elizabeth tunnel could have been still further shortened by flattening the grade of the waterway and by locating the Antelope Siphon directly north of the tunnel, but in both cases the saving in tunnel costs would have been partly, if not largely, offset by the cost of the enlarged canal section and the longer siphon. It is to be emphasized, however, that the canal was located and its gradient fixed to deliver water into a reservoir selected for power purposes and largely built from power funds, and that it was the power scheme that made the longer and larger Elizabeth tunnel necessary. The location and grade of the waterway above Fairmont Reservoir, and the length and cross-section of the Elizabeth tunnel, were not determined by economic considerations, but by the use of these structures for power purposes.

Mr. Shuey was employed throughout the aqueduct construction in his present capacity of superintendent of agricultural operations, and may not, therefore, have been in touch with the departments that designed and located the waterway.

INTERESTED ENGINEER.

San Francisco, Calif.
June 19, 1924.

EDITOR'S NOTE:

Mr. Shuey, in his communication to the Journal of Electricity referred to above, objects to the statement that a material part of the cost of the aque-

DISCUSSION



Engineer Disagrees With Opinion Regarding Los Angeles Aqueduct Grade

To the Editor:

Sir: Mr. George R. Shuey, assistant engineer, Department of Public Service, City of Los Angeles, in explaining the reason for the location of the Los Angeles Aqueduct in his letter published in the Jour-

duct was for power purposes and that for a water conduit only, had power not been contemplated, the aqueduct cost would have been substantially less. The following quotations from official sources are pertinent in this connection:

From "The Second Annual Report of the Engineering Department on the Los Angeles Aqueduct, City of Los Angeles, Department of Public Works, December 5, 1907," page 5:

"A study has been made of the grades in this division not only with reference to the economic distribution of the fall between various sections but also the value of each foot of fall for the prospective generation of water power has been kept in mind and no grades have been adopted which would represent a greater loss in prospective power value than would be saved in present construction cost."

From "Third Annual Report of the Bureau of the Los Angeles Aqueduct to the Board of Public Works, 1908," page 29:

"Capitalizing \$20.96 at 5 per cent gives \$419.20 as the asset of the city for each theoretical horsepower. Every foot of head required in the tunnel reduces correspondingly the available power drop in San Francisquito Canyon and hence represents a direct loss in power output which can be determined for any assumed rate of flow. Every horsepower so lost represents a lost asset to the city of \$419.20."

From the same report, page 76:

"In the determination of economic grades, each foot of available head for power was estimated to be worth \$13,750 and the grades adopted for each class of construction plus the power value of the head consumed in grade is a minimum."

From "First Annual Report of the Chief Engineer of Los Angeles Aqueduct to the Board of Public Works, March 15, 1907," page 63:

"The less the fall or grade of a conduit, the slower the velocity and consequent discharge. The larger the conduit with any fixed grade, the higher the velocity and discharge, provided other conditions are similar. From the intake until the crest of the Coast Range is passed, every possible saving in grade is made in locating the aqueduct. South from the crest of Elizabeth Lake to the San Fernando Valley, the fall is 1,700 feet and here power will be developed. North of the summit at Elizabeth Lake, the prevailing grade is about one foot per mile and seldom exceeds two and one-half feet per mile."

The recommendation of the original board of consulting engineers contains the following (Appendix E of First Annual Report, page 123):

"Third: The raising of the elevation of the entire line from Indian Wells to the Fairmont Reservoir about 60 ft. at the lower end, and 110 ft. at the upper end, utilizing a further amount of the surplus fall, and thus permitting the utilization of the Fairmont Reservoir for storage as a regulator of the power plants to be built on the drop in the San Francisquito Canyon.

"Fourth: The elimination of the proposed siphon across Antelope Valley 11 miles in length, with a maximum head of 400 ft., and substituting a conduit line passing around the head of the valley. This increases the total length of the aqueduct about 21 miles, but effects a saving in head at Fairmont Reservoir amounting to 60 ft., available for storage and power.

"Fifth: The construction of the Elizabeth Lake tunnel next to the power drop of the larger dimensions and steeper gradient needed for developing a rate of flow in the hours of maximum power demand, two and one-half times as great as the mean rate of flow, thus largely increasing the amount of power available for sale, and for the development of manufacturing."

It is evident from the preceding quotations that power development was a major aim of the aqueduct project from the very beginning. Indeed it appears that it was believed that power development would pay the entire cost of the aqueduct project as appears from the following interview of William Mulholland in the Los Angeles Examiner April 11, 1910, respecting the first issue of \$3,500,000 power bonds:

"When the voters of Los Angeles go to the polls on April 19th and vote on the power plant bonds, they will not vote a bond issue in the sense of the word, but will make an investment which twenty years hence will turn back into the city treasury the entire \$24,500,000.00, provided for the construc-

tion of the aqueduct, with interest. * * * We may never require another bond issue, for this one may lay an earning foundation that will itself pay for the rest of our future improvements."

Since all of the aqueduct plans and estimates from the very beginning included power as a major aim, it is impossible to say what the design or the final cost would have been for water alone. The preceding quotations make it evident that the design would have been different and the cost very substantially smaller. This is not to say that power should not have been provided for but it does show that power, originally estimated to carry all of the cost, should now be charged with at least part of the cost, certainly with not less than one-half of the total.

THE EDITORS.

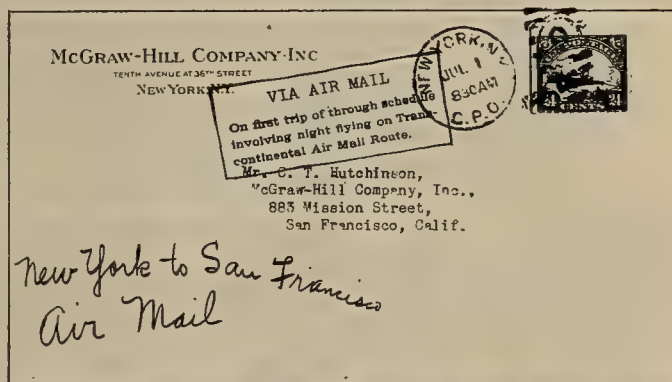
Editor Emphasizes Importance of Coast to Coast Aerial Mail Service

To the Editor:

Sir: I am taking this opportunity of saying hello and at the same time patronizing the inauguration of the Air Mail Service between our two cities.

I feel very strongly that anything which cuts down the time of communications and the transfer of information between distant points must have its effect in increasing the business done between those points and we are urging the use of the Air Mail wherever possible.

We are convinced that there is a tremendous future in aviation and that we should do everything possible toward its development. The ability to leave



Facsimile of envelope which was delivered via airplane mail less than 48 hours after it was mailed in New York.

the Atlantic Coast in the morning and land in San Francisco the same evening, even though it be a stunt as in the case of Lt. Maughan, is a remarkable achievement in annihilating distance and bringing our country and the world much closer together. I very much doubt that the airplane will replace the automobile except in special cases but it has a tremendous field in the carrying of mail and express matter and we feel that the free use of the Air Mail will do much to develop the commercial possibilities of air travel. Builders of air craft, motors and accessories must be encouraged if we are to maintain our place in aviation development and for this reason we feel that the Air Mail Service deserves great credit and the hearty cooperation of business men in general.

FRED H. COLVIN,
Editor, American Machinist.
New York, N. Y.
June 30, 1924.



THE remark is often made that there is little or no lightning in California. The accompanying two photographs are presented in refutation of this statement. They were taken near Coachella, Calif. Max Wells of The Southern Sierras Power Company, who took the photographs, was engaged in testing meters at the time the storm broke. Central station men in the Middle West and East are familiar with the difficulties of operating under storm conditions similar to those pictured but in California they are very rare.



Public Relations Featured at Northwest Convention

By Berkeley Snow

Northwest Editor, Journal of Electricity

BECAUSE of political agitation inimical to the welfare and best interests of the electrical industry, public relations formed the major theme of the seventeenth annual convention of the Northwest Electric Light and Power Association held at Gearhart, Ore., June 25-27, 1924. Measures for combating the wave of municipal ownership propaganda which is threatening the industry in both Washington and California were the chief topics of discussion during most of the convention sessions, which drew a record attendance of 267.

The first day was devoted to a business meeting and general session at which George L. Myers, assistant to the president, Pacific Power & Light Company, Portland, and president of the Northwest association, outlined the progress of the industry during the past year.

He regretted the lack of cooperation in the work of some of the committees, stating that many of the committee meetings throughout the year were attended by only a minority of the members so that the most efficient work was somewhat hampered. He suggested as a remedy that central station executives see to it that employees of their companies who are assigned committee work be given every opportunity to be present at meetings and to give their time and effort to the work assigned.

Among the various important subjects commented upon by Mr. Myers was the subject of taxation. He stated that an investigation into the taxes paid by 14 of the largest companies operating in the Northwest geographic division revealed that taxes had increased 42 per cent during the period 1920-1923, and that this was 10 per cent greater than the increase in gross revenues and operating expenses for the same period, and more than 50 per cent greater than the increase in capital investments. "The fact is," he said, "that out of every dollar earned these companies paid ten cents in taxes during the year 1923," and, "It is no doubt true that no industry is contributing a greater amount of its income to the support of government." He pointed out that at the present time there is under consid-

***T**HE eyes of the entire electrical industry are turned to the Northwest, for the present, on account of the position forced upon that geographic division by government ownership agitation in the State of Washington. Much concerning this vital issue was said and done at the seventeenth annual convention of the Northwest Electric Light and Power Association held at Gearhart, Ore., in June. Mr. Snow has set down the principal thoughts which came out of this important event, and has condensed the happenings so that a composite impression of the various sessions can be gained quickly.*

eration in different states in this division proposed legislation establishing new and different bases of taxation of utilities, and recommended the appointment of a committee for the ensuing year that should give this subject its attention, and should attempt to create "a public sentiment receptive to a consideration of legislation seeking to make for uniformity in the laws of taxation as applied to public utilities in the states of this Division."

Franklin T. Griffith, president of the Portland Electric Power Company, and newly elected president

of the National Electric Light Association, in addressing this session, decried the fact that the public is being misinformed by pernicious propaganda appearing in the daily press that apparently emanates from authoritative sources, but that actually contains palpable falsehoods. He cited, as an example, an interview with Senator La Follette, which recently was given wide publicity through the press of the country, in which the rates in Ontario, Canada, were compared with those of the United States, and stated that the industry must meet this situation by giving its own story, truthfully told, the widest possible publicity.

The electric utilities, he said, are giving the best possible service at the lowest possible cost, and are thereby achieving, under private ownership and public regulation, exactly what the political propagandists claim they will accomplish under government ownership. He declared that the statement of the government ownership proponents that they can give cheaper service because they can secure cheaper money, is economically unsound, because the tremendous amount of tax-free property involved in the plan they propose would result in a consequent spreading of the tax burden upon the public in some other form. He predicted an early passage of an amendment to the constitution prohibiting the issuance of tax-exempt securities, and stated that when such a law became effective one of the principal arguments of the propagandists would be eliminated.

In announcing the appointment of W. R. Putnam, vice-president and general manager of the



Delegates to the Seventeenth Annual Convention of the N

Idaho Power Company, as chairman of the National Commercial Section, Mr. Griffith stated that the national association was in the future going to give more attention to the West. The fact that the Pacific Coast will be the front line in the battle against government ownership has focused the attention of the entire electrical industry of the country upon this section, and he declared that the electric utilities of California, Oregon and Washington may expect the fullest cooperation in this fight from the National Association.

In discussing customer ownership, he said that the acquisition of a widespread list of shareholders as partners in the business was more to be desired than the securing of a large number of bondholders, who were, in reality, only creditors having a lien on the property. In developing this idea he stated that the customer owners of the California utilities were going to be an important factor in counteracting the claims of the Water and Power Act proponents. He concluded by urging the utilities of the Northwest to exert every effort to increase the number of partners in their business.

M. H. Aylesworth, managing director of the National Electric Light Association, addressed the convention on "What Is Superpower?" and declared that superpower was not a mysterious dream of the future, to be acquired through voting a large amount of public money for developing water power, but was actually in the process of development through the interconnection of the systems of the large utilities.

In an address on the "Potential Tomorrow," Irving E. Vining, president of the Oregon Chamber of Commerce, urged utilities to talk the language of the people, learn their problems, gain their confidence and work shoulder to shoulder with them in furthering the progress of the country. The men of the electrical industry, he said, cannot sit in their offices or gather in conventions and expect the public to understand their problems. They must mingle with the people and tell their story at every opportunity.

John A. Laing, vice-president and general attorney of the Pacific Power & Light Company, Portland, delivered a comprehensive paper on the "Indeterminate Permit." He laid bare the evils of the pres-

ent franchise form under which most utilities are operating—franchises containing regulatory provisions, and limited as to time—declaring that the regulatory provisions usually found in franchises have no place in those documents, but are inherently reserved to the legislative bodies of our government, and are subject to change or revision from time to time by such legislative bodies as conditions warrant. He said that the inclusion of such provisions in a franchise as unchangeable contract rights has frequently confused and prejudiced the timely exercise of the power of the state to safeguard the public interest in securing adequate service at reasonable rates. The evil of limiting franchises as to time is found, he said, when the utility attempts to finance its growth, since prospective investors must be "asked to gamble on the renewal of the franchise on reasonable terms, and they naturally demand recognition of this risk in the terms upon which they part with their money." Thus in some cases "the public suffers a double detriment in the loss or impairment of service and in the burden of supporting the cost of an unnecessary risk."

These evils, he stated, could be eliminated by the passage of legislation permitting the issuance of the indeterminate permit, and such legislation could be secured only by education both inside and outside the industry to the point where the basic principles underlying such form of franchise should be well understood.

The subject of "Taxation of Public Utilities" was ably presented in a paper by A. A. Smith, secretary and general counsel of the Eastern Oregon Light & Power Company, Baker, Ore. He called attention to a number of objections to the ad valorem basis of taxation which is at present applied to utilities of this division, the principal objection being that it does not take into consideration the ability of the utility to pay. Although under the present system of regulation the tax paid by utilities is taken into consideration in fixing the rates, "yet there is a limit beyond which the tax paid cannot be reflected in the rate fixed," he said, and an increase in taxes can be passed on to the consumer to a limited extent only. He stated that a committee of the National Tax Association, after an investigation into the taxation



Light and Power Association, Gearhart, Ore., June 25 to 27, 1924.

of public utilities, had recommended the abolition of the ad valorem tax, since it generally resulted in the utility carrying more than its portion of the tax burden, and had recommended a system combining the gross earnings and net income tax. He pointed out that this form of tax is in reality a tax on gross earnings but takes into consideration the ability of the utility to pay, since the tax would be increased as the net income increased. He closed by urging the association to give its attention to a study of this tax in connection with its investigation of the general question of taxation.

The general session was brought to a close by the presentation of a paper on "Merchandising Accounting," read by M. J. Wilkinson, assistant secretary and assistant treasurer of the Pacific Power & Light Company, Portland, in which it was brought out that before a utility could prescribe a suitable classification of accounts for merchandising, it should determine as a matter of policy whether it was in the merchandising business for the purpose of building load or for making a profit on the goods sold. It was stated that if the merchandising activity of the utility was primarily for load building, then it need charge to merchandising only such items of out-of-pocket expense as could be eliminated if it were not so engaged. On the other hand, if the utility desired to make its merchandising department pay its own way out of gross profits from the sale of goods, it would then be proper to make that department bear its proportion of overhead expense the same as all the other departments of the business.

The second day was devoted to an open session of the public relations section, presided over by A. C. McMicken, commercial manager of the Portland Electric Power Company, in the absence of Norwood W. Brockett, director of public relations of the Puget Sound Power & Light Company.

"Government in Business" was the subject of an address by George A. Hughes, president of the Edison Electric Appliance Company, Inc., Chicago. Mr. Hughes drew attention to three objections to government in business. In the first place, he said, the government is inflexible and dilatory and is unfit to handle the changing conditions of modern business. In showing that the government's attitude was

political in its treatment of business, he cited the experience of the Shipping Board with Congress, and partially blamed this monstrous failure, which has cost the people of the United States more than three billions of dollars, upon this fact. Lastly, he declared that the government cannot make its activities pay, and called attention to the annual deficit in the Post Office Department. He pointed out that government operation was synonymous with failure and that in every instance in which the government has taken a hand in business the public has had to pay the resulting bill in increased taxes.

R. F. Pack, vice-president and general manager of the Northern States Power Company, Minneapolis, stated that satisfactory public relations provides the answer to government ownership in his address on "Public Relations." In attacking the electrical utilities, the socialistic and political propagandists have chosen the most vulnerable spot in the business of the nation in which to insert their entering wedge in a program which has as its ultimate aim the control of food, clothing and shelter, the three main necessities of life. He pointed out that the small business man and farmer, when they vote for government ownership of utilities, are only deluding themselves, since they are initiating a program which means their own ultimate elimination from the business life of the nation. He concluded by saying that if the electrical industry will keep the socialists, who are pointing their propaganda at the utilities, continuously on the defensive by informing the public of the full intent of the government ownership program, that is, ownership of the entire machinery of production and distribution, they will be doing the greatest possible good for the welfare and prosperity of the nation.

The place of the employee in the public relations question was discussed by Geo. L. Myers, president of the association, who said that, since the sphere of influence of the total number of employees, in their personal and business contacts with the customers of the utility was so widespread, every effort should be made to acquaint the employee with the business of the utility and make him satisfied with his service in it. He suggested a systematic course of instruction be given through company magazines and wide-

spread distribution be given some of the available literature about the industry much of which now never gets beyond the desks of executives. In this way, he said, the employee's knowledge can be increased and his effectiveness in counteracting misstatements about his company enlarged. To more closely bind the employee to his company, he advocated the establishment by the company of a reserve to be set up annually out of earnings for the purpose of creating a retirement fund for old employees, in much the same way as such funds are now accumulated for the retirement of old property. This, he said, could be accumulated from the increased volume of business which may reasonably be expected as time goes on, provided that regulatory bodies, when fixing rates, could be made to recognize the justness and desirability of such a policy, and it was his opinion that the public would sustain a theory of regulation that countenanced this practice.

Purpose of the Bone Bill Expounded

"The Bone Bill—Its Purpose and Effect," was the next subject for discussion at this session, and was presented by John B. Fiske, consulting engineer of The Washington Water Power Company, Spokane. He said that one of the main contentions of the proponents of the measure was that its passage would provide a great quantity of cheap power which would attract many new industries to the state. In proving the fallacy of this contention he pointed out that that portion of the cost of manufactured articles in the State of Washington represented by the cost of power was about 2.1 per cent, and drew the conclusion that even if this percentage could be cut in half, it could not greatly stimulate the influx of capital and industry.

Rural Electrification and Better Home Lighting Receive Consideration

The evening session of the public relations section was opened by some "Observations on Rural Electrification," by Lewis A. McArthur, vice-president and general manager of the Pacific Power & Light Company, Portland, who said that electricity on the farm was nothing new in the Northwest, but no sufficient study of the problem of electrifying all the farms had as yet been made. He stated that F. O. McMillan, associate professor of electrical engineering of the Oregon Agricultural College, Corvallis, was about to conduct a survey of all the arable lands in the State of Oregon with the intent of determining to what extent the farms had been electrified, and to what extent this electrification might be expanded in the future, and that this survey would be of great importance to utilities in determining the policy on which they could make rural extensions.

A. C. McMicken, sales manager of the Portland Electric Power Company, Portland, explained the plan of the "Better Home Lighting Activity," sponsored by the N.E.L.A., the Society for Electrical Development, and other national associations, societies and councils allied with the electrical industry. The plan of campaign, which will be carried on as a local

activity by the electrical industry in each community, Mr. McMicken said, will take the form of "an educational contest on better home lighting operated through school children, and reinforced by advertising in popular magazines," and this plan has been widely endorsed by educators "because it is of an educational nature; because it should result in im-



Entertaining one of the national visitors. Mrs. L. A. McArthur, George Hughes, president, Edison Electric Appliance Company, Chicago, and L. A. McArthur, vice-president and general manager, Pacific Power & Light Company, Portland.

proving living conditions and eyesight; and because the teaching staff will not be asked to devote time in special instruction on the subject."

Customer Ownership an Important Phase of Public Relations Program

The discussion on public ownership of securities was opened by Geo. L. Myers, president of the association, who reviewed the growth of this activity among the utilities of this geographic division since it was commenced in 1917, stating that in 1923 there were more than 18 times as many stockholders and more than 33 times as many shares sold as in 1917, and that approximately 89 per cent of the number of stockholders was procured and 89 per cent of the shares was sold during the last two years. He pointed out the contrast between the interest involved by reason of investment under conditions of private ownership and government ownership in these words:

"In the case of private ownership there is a widespread distribution of interest represented by investment and a greater local interest among the people of most modest means. In the case of government ownership there is neither as wide a distribution,—nor is there as great a local interest. Furthermore, not nearly as many people of modest means are interested. This is attributable to the fact that the money invested in the property of government-

owned utilities is represented in bonds owned by people generally of large means, more of whom live outside the territory of service than is the case under conditions of private ownership."

S. E. Skelley, manager of investment department of the Pacific Power & Light Company, Portland, reported as chairman of the committee on



A prospect and two salesmen. P. H. Booth, district sales manager, Edison Electric Appliance Company, Los Angeles; W. M. Shepard, vice-president and general agent, The California Oregon Power Company, Medford, and R. W. Turnbull, Northwest manager, Edison Electric Appliance Company, Portland.

public ownership of securities, urging, among other recommendations, that the companies keep their stockholders interested in the company by sending literature with the dividend checks, by personal contact, or by other means, pointing out that unless this were done the stockholder might succumb to the temptation to convert his stock into cash or transfer it to some other form of investment, and thus be lost as the friend of the company that he must have been at the time he originally purchased his stock.

The committee also urged "against the practice of originally placing stock under an agreement to repurchase or take in these shares on resale account at no expense to the stockholder." It recommended that a fair charge be made for reselling the stock partly to defray the expense of such resale and partly to discourage the possible use of the company as a savings institution. Another recommendation took the form of a warning to the association to keep a watchful eye on stock selling activities generally, since, it was pointed out, the average customer-owner buys on faith, often investing the savings of a lifetime; and therefore, anything that would tend to destroy that faith, such as the passing of a dividend by one of the companies, might result in an almost irretrievable damage to the activity by the industry at large.

The public relations session ended with the report of R. M. Boykin, manager of southern division of the Puget Sound Power & Light Company, Portland, for the committee on public speaking, saying that during the past year many addresses had been made before civic bodies by public utility executives. He recommended that this activity be continued and expanded since it has proved an excellent way of taking the story of the utilities to the people.

Commercial Section Discusses Range Business and Power Survey

The third day was devoted to sectional meetings of the commercial, technical and accounting sections at which the various reports of the committees of each section were abstracted and discussed.

The morning session of the commercial section was given over entirely to a discussion of the range business, in which it was brought out that the work on the range survey had been temporarily discontinued due to lack of funds, but M. H. Aylesworth, managing director of the National Electric Light Association, said that the manufacturers had recently agreed to supply the necessary \$25,000 so that the work can be immediately resumed. This survey will be carried on in four distinctly different classes of residential districts; a typical residential district of a large city, a rural district, a small-town residential district, and a small manufacturing town where the habits of the people are similar. The last district is intended to produce results under conditions of the least possible diversity.

W. R. Putnam, vice-president and general manager of the Idaho Power Company, Boise, Ida., said that he believed the range survey should include an investigation of water heating, since in many cases there is no revenue from water heating at the present time; and that he believed that eventually it would be found desirable to construct a rate for combined range, water heating and lighting service.

P. M. Parry, commercial manager of the Utah Power & Light Company, Salt Lake City, Utah, stated that the deferred payment plan of purchasing merchandise had resulted in the sale of the better quality of ranges, and suggested that the number of types of ranges be reduced to six or seven different models, so that the manufacturers could reduce the cost of each model.

The discussion in general brought out the fact that the water heating business is needed to help develop the range business, and it was generally conceded that the utilities needed more revenue from the water heating business.

At the afternoon session, P. M. Parry, commercial manager of the Utah Power & Light Company, Salt Lake City, Utah, presented the report of the power bureau of the commercial section. In this report he showed the kilowatt-hour consumption per unit of product, and the load factor in various industries in the Northwest. It was brought out that this information was of considerable value to utilities in soliciting power business, and it was suggested that the compilation of these data be continued permanently during succeeding years in order to keep up

with changes in processes of manufacture, or with the introduction of new machinery, or any other element which might tend to increase efficiency of manufacturing plants and so reduce the power requirements.

W. M. Hamilton, district manager of the Portland Electric Power Company, Salem, Ore., in a prepared paper discussing Mr. Parry's report, gave data on the power requirements in the paper industry, which disclosed that there was a fertile field for the manufacture of paper in this geographic division because of the excellent supply of paper pulp wood.

In commenting on the report of the lighting section, V. H. Moon, appliance sales superintendent of the Pacific Power & Light Company, Portland, discussed the kitchen lighting campaign conducted recently by that company—the first campaign of its kind in this division. He stated that the expected placing of the unit with 15 per cent of the residential customers, as was confidently predicted by the manufacturers, was not realized in this campaign, but he said that the results that were obtained were entirely satisfactory to his company, that considerable load was added to the lines without additional investment, and that the campaign was made to bear its own expense.

"Safety First" Is Discussed in Technical Section

"Safety first" activities formed an important subject in the session of the technical section. Z. E. Merrill, assistant general manager of the Mountain States Power Company, Albany, Ore., in his report on the work of the accident prevention committee, expressed satisfaction in the fact that the proposed "Industrial Sanitation Code" was not adopted by the Engineering Standards Committee. This code was said to propose to place unduly arduous burdens upon utilities.

George I. Drennan, travelling inspector of the Pacific Power & Light Company, Walla Walla, Wash., in a prepared paper on accident prevention, said that the secret of success in this activity depended on a

continuous program of education among the men "from home to plant, for no man can be considered a safe man eight hours a day and a careless one for the other sixteen." He said that it was not difficult to interest men in safety educational work, and that he had frequently seen a group of men show interest in a safety meeting from 8 o'clock p.m. until midnight, discussing accidents and the means for their prevention.

H. H. Lewis, electrical inspector, department of labor and industries, State of Washington, stated that his department would probably make mandatory among the utilities of the state the installation of a system of checking the amount of safety work given to each employee. Under this system a card would be kept for each employee on which would be recorded what instruction he had from time to time in the Shaeffer method of resuscitation, what safety meetings he had attended, and what other educational work he had received.

Other Important Technical Matters Are Brought In

In the report of the overhead systems committee, H. H. Schoolfield, chief engineer of the Pacific Power & Light Company, Portland, made a plea for a uniform method of testing pin type insulators by manufacturers, not, as he said, for the purpose of "making any recommendations to the industry of any particular insulator for any class of service, but to give the engineer some data on which he can base his studies in dealing with the ratings shown by the manufacturers in their catalogs." That part of the report dealing with the use of bare wire for distribution line work produced the most discussion, the preponderance of opinion being that bare wire was safer and made a stronger line, but that it was more difficult to string on hot circuits. This opinion was not unanimous, and it was determined that each utility should work out its own individual problems according as conditions seemed to warrant.

George E. Quinan, chief electrical engineer of



Some of the convention celebrities. Left to right: Lewis A. Lewis, sales manager, The Washington Water Power Company, Spokane; John B. Fiske, consulting engineer, The Washington Water Power Company, Spokane; W. R. Putnam, vice-president and general manager, Idaho Power Company, Boise; John A. Laing, vice-president and general attorney, Pacific Power & Light Company, Portland; George L. Myers, assistant to the president, Pacific Power & Light Company, Portland, president of the Northwest Association.

the Puget Sound Power & Light Company, Seattle, reported for the committee on inductive co-ordination that the closest cooperation existed between the power and telephone interests of the nation in the attempt to clear up "the haze in which the inductive interference problem has been shrouded."

The report of R. E. Thatcher, service superintendent of the Puget Sound Power & Light Company, Seattle, for the meters committee, brought out the fact that, due to the increasing use of socket appliances in the home, the utilities are proposing to demand of manufacturers the redesign of the 5-ampere, 2-wire meter so that it will be more accurate on overload, or to adopt the use of a 10-ampere meter for registering residence consumption. The report stated that the manufacturers had agreed that they could produce a 10-ampere meter at the same price as a 5-ampere meter if they could be sold in the same numbers as the 5-ampere meter is now sold, and in an endeavor to determine the probable number of utilities that might adopt the 10-ampere meter for residential use under such price conditions, a vote was taken within the committee, which showed six utilities for this change and one against it.

Accountants Confer on Classifications

One of the important matters taken up in the accounting section was that brought up in the report of the committee on classification of accounts, presented by M. J. Wilkinson, assistant secretary and assistant treasurer of the Pacific Power & Light Company, Portland, in which it was disclosed that the State of Oregon was the only state in this geographic division that had not adopted the National Association of Railway and Utilities Commissioners' Uniform Classification of Accounts. The report said, "Because of the stand taken by the commissioners of the State of Oregon it was thought advisable to discontinue, for the time being, any further activity in this direction." It was shown that twenty-two states had adopted the classification, and that many others were considering the adoption of it, and that California was the only state thus far that had dis-

played an unwillingness to accept it by adopting the classification of the Federal Power Commission.

I. D. Murfield, chief clerk, stores accounting department, Portland Electric Power Company, Portland, presented a comprehensive and instructive paper on the "Balance of Classified Stores," in which he explained in detail each operation of his system and presented as exhibits a sample of every form required to carry it out.

R. M. Boykin Elected President

At the executive meeting held in the evening of the third day, the following officers of the association were elected for the ensuing year: president, R. M. Boykin, manager southern division, Puget Sound Power & Light Company, Portland; vice-president for Idaho, R. B. King, Idaho Power Company, Boise; vice-president for Oregon, J. P. Lottridge, Eastern Oregon Light & Power Company, Baker; vice-president for Utah, D. C. Green, Utah Power & Light Company, Salt Lake City; vice-president for Washington, Norwood W. Brockett, Puget Sound Power & Light Company, Seattle. The following were named as members of the executive committee at large: J. I. Colwell, Western Electric Company, Seattle; A. S. Moody, General Electric Company, Portland; A. C. McMicken, Portland Electric Power Company, Portland; and L. B. Faulkner, Puget Sound Power & Light Company, Olympia, Wash.

Among the resolutions passed by the executive session were: a reiteration of last year's resolution condemning tax-exempt securities, and recommending the passage of legislation necessary to prohibit the further issuance of them; a resolution recommending the appointment of a committee of the association to make a study of utility taxation; a resolution recommending the appointment of a committee of the association to look into the possibility of the establishment by utilities of an employees' old age competence fund; and a resolution expressing appreciation to the National Electric Light Association for the presence of representatives of the parent body at this convention.



Judging from the costumes golf was a popular sport. Left to right, E. F. Whitney, manager, General Electric Company, Portland; A. C. McMicken, sales manager, Portland Electric Power Company, Portland; D. C. Green, vice-president and general manager, Utah Power & Light Company, Salt Lake City, and L. A. McArthur, vice-president and general manager, Pacific Power & Light Company, Portland; P. M. Parry, commercial manager, Utah Power & Light Company, Salt Lake City; S. J. Halls, British Columbia Electric Railway Company, Ltd., Victoria, winner of the Kilowatt Cup.

Common Sense in Public Relations

By R. E. Smith*

Advertising Manager, Southern California Edison Company,
Los Angeles, California

IT is the ambition of this committee to rear in the industry a structure of constructive thought of such dimensions as will command the attention which this subject of public relations deserves. Like good builders, before erecting the flagpole on which to fly our banner, we first studied our foundations—we sought the bedrock of our problem, and this is the first phase to be discussed.

We speak of the need of courtesy—of plans to educate the public—of advertising—features which are entirely obvious and to a great degree superficial. What are the fundamentals? If we have public relations problem—why? And what are we going to do about it?

"Public relations" means all relations with the public and is much broader than the common conception of relations with consumers. It involves all the elements of public contact and public opinion as manifested by individuals, the press, the schools, the clubs, the governmental agencies, the present generation, the coming generation and the passing generation. Any study that ignores any of these elements is inadequate.

The first fundamental we recognize is that the public mind is restive—a hangover from war times. Ours is not the only group that is studying this condition. The conservative element of organized labor is concerned about its future. Agriculture seeks public good will. The church is facing the greatest crisis of modern times. Art, literature, the drama and music are all assailed by radical ideas. The meddlers are having their innings. Common sense—careful thought and cool judgment are needed in every phase of our existence.

In every first class movie the villain endeavors to poison the minds of the audience by misinterpreting the acts of the hero. Intrigue, deceit, direct lies and half truths are his weapons. In this analogy, if you please, we are the hero and the villain is that element in our social structure that is forever trying to foster its own gain by undermining established institutions. They care not whose house they wreck so long as they can get a sack of kindling for themselves. They seek to poison the public mind, and ours is the task of supplying the antidote.

NO phase of the electrical business is commanding more attention today than is public relations. At every convention, at every gathering of electrical men, it is the major theme of discussion. This paper, the editors believe, analyzes the subject more carefully than has ever been done before. It deals with fundamentals, and, as the title indicates, make some common-sense suggestions.

represent many committees, conferences, conclaves and conventions which are long on discussion and short on action.

You will observe that we are trying to tell the truth as we see it and expect no medals for undeserved compliments.

This is strong talk, but is it not justified? For at least eighteen months the paramount subject at all electrical gatherings has been public relations. Yet what has come from it all, but talk? What particular, definite plan has been suggested to convert this abstract theory into a tangible entity?

As Mark Twain expressed it, "Everybody talks about the weather but nothing is ever done about it." Is it not true that we gather in groups and talk to each other about public relations and go back to our daily chores, first taking the afternoon off for a little golf?

We admit that our public relations will stand improving but what are we going to do about it, and when shall we start in? Shall we make a definite beginning now or shall we wait until the next convention and then talk it all over again?

Problem Fundamentally Simple

Possibly the electrical industry has become so accustomed to dealing with complex problems that it does not recognize a simple one when it is encountered. The entire question in its details is remarkably simple, but in the aggregate it looms large. So does the grand stand at the race track, yet it is nothing but boards and nails placed one at a time by rudimentary operations. When the contract for the grand stand is awarded, the successful bidders do not stand around talking about it but tackle the job in its elements and proceed to put the boards and nails together, one at a time.

The raven in the fable did not perch on the rim of the pitcher talking about how he would get a

* A paper delivered before the Public Relations Section Meeting, Pacific Coast Electrical Association Convention, Coronado, Calif., June 16-20, 1924.

drink. Instead, he tackled the job in its elements, dropping in pebbles, one at a time, until the water was brought within his reach.

When we say public relations we mean, of course, favorable public relations and this in turn means getting along with people, one at a time. It is beyond the province of the committee room or the director's table, and involves simply the every day contact between the utility employee who renders a service and the customer who pays the bill. It means more than cleanliness, promptness, courtesy and all the other desirable attributes—it means the whole-hearted, generous attitude that exists between friends and neighbors.

Simple things, these—and trite. "The same old stuff," some of you will say, but we must deal with the old stuff until it is successfully disposed of.

The First Law

All of the laws which fill our libraries and congest our courts could be scrapped if humanity would observe the fundamentals as laid down in the ten commandments and even these, you will recall, were reduced by the Nazarene to two, one of which meets every worldly need—"Love thy neighbor as thyself."

There you have it—the sum total of all human frailties cared for in five words. If the problem of the League of Nations can be met so simply, why is it necessary for us to go so far afield in seeking the answer to our troubles?

Afraid of the Dark

When the writer first began to consider the material for this paper he chose for a title, "Afraid of the Dark," for this seemed to illustrate very well the present situation in public relations. Most of the public's antipathy to the public utilities may be traced to the feeling that within these organizations there is something going on which the outsider cannot understand. Time and again it has been shown that when our plans and policies are explained the critic concedes that we are right.

In other words the public is afraid of the dark, but when the searchlight of understanding is turned on, all these misgivings disappear.

In much the same fashion, our executives have been afraid of the dark, thinking that the public could not understand our technique and would misinterpret our motives in making explanations. Here again experience has shown that the public will respond most favorably when we take them into our confidence. Again the "banshee" cannot stand the light of day.

To summarize this rather lengthy introduction: we recognize that we have been hiding in our tents when we should have been out in the open field; that we must split this job into its elements, tackling them one at a time, and finally that we will put an end to this eternal palaver and go home and go to work.

From this point the discussion will be taken up in four directions: (1) what has not been done: (2) what has been done: (3) what must be done and (4) how to do it.

In the first place we have not attained a reputation for fine service such as that enjoyed for example,

by the Standard Oil Company. Maybe we think we have, but honestly, do folks praise us the way they do the Standard? Where is all the muckraking that used to be the lot of Rockefeller and the oil trust? The remedy is apparent but its application must be insistent, consistent and persistent.

If we had done all that we should, there would not be girls answering telephone calls with a languid "hello" or men responding with a brusque "'lo." Have you observed the girl at the counter who looks at the applicant with that death-defying, 1924 stare and poisoning her pencil, asks, "'s name?" Have you seen the troubleman who looks so disreputable that he has to exhibit his badge to get into the house? Have you ever noticed the power company's automobile crowd its way through the traffic jam, stealing the right-of-way from less audacious drivers and terrifying timid pedestrians?

How many executives are there who are considerate, courteous and attentive to everybody? How many are setting a good example for their employees? How many believe that courtesy like charity begins at home?

The traveling salesman who was caught in a storm and took shelter in an Episcopal chapel during the morning services, told his friends afterwards that he liked their style because they said, "O, Lord, we have left undone those things that we ought to have done." The same prayer would be good for the electrical industry.

Industry Must Clean House

To date, we have not cleaned house. The front rooms may be in fine shape but we have left untidy corners in the kitchen. We are not guilty of felonies nor even misdemeanors. We are getting along pretty well but why not finish the job and establish an industry that is so courteous and considerate that the people will recognize the fact without having to read it in our advertisements!

The very fact that so much attention is being paid to public relations is admission that something is wrong. "We have left undone those things that we ought to have done." Like the grandstand at the race track, the barrier between us and the public has been built, a piece at a time. Indifference here, discourtesy there, carelessness somewhere else—each an atom, but combined, their bulk is amazing.

What Is "The Public"?

Recognizing all this, let us stop right here and define "the public." We cannot expect to progress until we make an accurate appraisal of our objective. When we discover that human nature is both human and natural, many mental hazards will be removed. With this in mind we lay down the axiom that the public is a group of individuals. They resent treatment as a group but respond when recognized as individuals. This is the whole secret of public relations.

We consider the necessity of a fair attitude on the part of the press, the pulpit, the schools—all our group activities, but each is composed of individuals. The mother of the schoolboy is a member of the church and a subscriber to the paper. If her individuality has been recognized by the utility employees—

if she has always received prompt, attentive, courteous service, and if we multiply her by ten thousand, what is the effect on those abstract institutions called the press, the pulpit, and the school? When individual good will is attained, group antipathy will vanish.

What has been done? Any study such as this reveals many a cheerful note. Our outstanding achievement has been the consumer-ownership plan which makes the public a partner instead of a target.

The instruction of our personnel in the mechanics of public relations has not been neglected. In this work the pioneer has been S. M. Kennedy whose book "Winning the Public" has challenged the industry to improve its standards of service.

Many excellent plans have been devised for improving our condition. They cannot be discussed in detail at this time, but all of them combined are not sufficient on account of the line losses in transmitting the enthusiasm of the originator to the ultimate point of public contact.

Education and Information

What must be done? Nine men out of ten will answer "Educate the public." That, however, is the second step. Let us first make friends with the public. If this part is done the remainder will be less difficult. Right here attention is called to two significant words. The public resents being educated but is glad to be informed. Let us **educate** our employees and **inform** the public. The old-fashioned butcher at the cross-roads was on friendly terms with all his patrons. They liked him, traded with him and never gave a single thought to his problems. It was not until the meat business was handled on a national scale that some one decided to educate the public. They are still uninformed.

So far as I know, the Standard Oil Company has not conducted any educational campaigns, but has centered its efforts on kindly, neighborly service. An authority on business finance recently said that the public is not concerned with hair-splitting economic analyses. In other words, while one man is winning a point by arguing the effect of taxes on rates, another will win a dozen permanent friends by simple acts of courtesy.

Any flaws that exist in our public relations have developed, one at a time, and they must be corrected—one at a time. We set poles, one at a time, we install meters, one at a time, we collect bills, one at a time and we make friends, one at a time. Obviously, the people who set poles, install the meters and collect the bills are the very ones who must make the friends. There is no alternative—no wholesale method of doing the job.

Employees as Individuals

We have become accustomed to referring to "the employee" in the same careless manner that we mention "the public." Here again we must deal with individuals rather than groups. When we do this we will learn that we have abundant opportunity to improve the appearance and methods of our first line troops—the people who really make and maintain public relations. As individuals, they have in vary-

ing degree, intelligence, enthusiasm, loyalty, ambition and pride. Our success with them hinges on our ability to deal with these elements.

We need a generally higher type in these lower jobs. We should pay accordingly. Then we will be in a position to pick good ones. Two years of selective work along these lines would accomplish wonders in our public relations situation.

Then, how shall we do it? Having cleaned house, having inculcated every desirable attribute into our personnel, having made hosts of friends, we may safely go to the public with our message. Up to this point nothing has been said about advertising for the simple reason that we were not ready for inspection. But now we should advertise aggressively, explaining the principles of our business and demonstrating our sincerity.

Importance of Customer-Ownership

The next step is consumer-ownership. California power companies now have 120,000 stockholders of whom 108,000 live in the state. Their investment exceeds \$225,000,000 of which \$162,000,000 is held in the state. As expressed in a recent advertisement:

"This is practical ownership, retaining all the advantages of private management and initiative, protecting both investor and consumer through state regulation and enabling the public at large to participate in the reasonable profits accruing from a well-managed business supplying an essential service to a prosperous community."

Another step has been the formation of the "Courteous Service Club," conceived by R. A. Balzari and sponsored by the Public Relations Committee of this Association. This club meets our requirements in every detail for it breaks away from the executive class and takes its message direct to the point of contact.

"One at a time" is a phrase that has been used repeatedly in this paper. You can see now how adequately the Courteous Service Club fills the bill. "Always with a smile" is its slogan—the smile that comes from a kindly heart—the smile that provokes another smile and when that situation is developed to the n-th degree our public relations problem will vanish—the fog will be dispelled by the sunshine of neighborliness.

Industry Needs Public Confidence

We seek good will. That means public confidence. Every kindly act is a contribution toward public good will. Every contact is an opportunity to do this and the Courteous Service Club is the finest medium which has been devised up to this time.

There are three important contacts—the telephone, the letter and the personal meeting. These should be stressed at all times for here lies both our present weakness and our potential strength. They offer us a chance to throw in that extra ounce of service which tips the balance in our favor.

In any group we may find the indifferent cashier, the abrupt clerk, the careless workman, but there is one star performer who needs no coaching on how to handle people. Who ever heard of a successful salesman who needed to be educated on public contact?

The salesman, intuitively, plays all of his desirable attributes in every contact. He has to. They are his only tools. Every contact is a prospect and prospects converted into sales buy his bread and butter. He is the lead horse, always up in the collar whether the rest of his team is pulling or not.

Why should the salesman monopolize all these good traits? Are we any the less salesmen because the customer comes to us? When an application for service is signed, is that not a sale? Then why—why not show ordinary human interest during the transaction? We build favorable public relations one at a time.

This committee advocates the simplification of our business methods. Make "Service before red tape" our slogan. Simplify rates. Reduce the for-

malities preliminary to securing service. Arrange so that connections may be made after office hours. Do not annoy 999 people because the thousandth applicant may be dishonest. Take a chance occasionally. If we are to be recognized as humans we must abandon some of our inhuman fetishes.

Reviewing all that has been said: we realize that we must take this subject of public relations seriously; that the problem is elemental and therefore simple; that public opinion is the composite of individual opinion; that we must deal with individuals rather than masses; that we must raise the standard of our personnel; that perfection is impossible but none the less desirable and that we here and now take the pledge to make ourselves worthy of this public confidence which we seek.

All Records Broken in Construction of Sacramento Steam Plant

By Clotilde Grunsky

WITH the rivers at the lowest stage that had ever been recorded and with practically no snow in the mountains in January, it became apparent even that early in the season that 1924 was to be a dry year for California. For the power companies this meant not only that water for hydroelectric plants would be hard to find and that stored waters must be conserved as much as possible early in the season so that they could be used to meet emergencies later on in the year, but it meant also that an unusual demand would be made upon their lines for power. The farmer who must have water for his crops would start pumping earlier than usual and would pump more because gravity now was not to be had. Moreover, the water table was every day becoming lower under these much pumped areas, as the underground storage of past years was drawn upon, and water had to be lifted in some cases from twenty to twenty-five feet more than in previous years.

Several of the larger power systems of California were fortunate enough to have construction projects already under way which would bring in additional hydroelectric power at the crucial moment. The Pacific Gas and Electric Company determined to install additional steam capacity if a practicable point of construction could be found and if prospects seemed favorable for bringing in the power in time to be of use during the dry season. It was already the last of January by the time the need was apparent—and the water shortage would be acute by June. Inasmuch as a rush job of the year 1920 had taken twelve months to put upon the lines, this did not seem a hopeful probability, but the project was nevertheless undertaken.

In looking over the prospects, it was apparent that the Sacramento steam plant of the company was the best possibility. This plant had been erected some twelve years before, with the idea that it would some day be enlarged by the addition of a 5,000-kw.

turbine. In considering the size of the unit to be installed, it was remembered that complete drawings were on hand for condenser and attachments for the 12,500-kw. unit which had been placed in the company's Oakland plant three years before. If these plans could be used and combined with the Sacramento building, so that new quarters need not be erected, the thing might be done. Calculations as to stresses were made. The floor plan of the turbine was cut from one set of drawings and pasted into the vacant space in the other set. It fit! It was determined to undertake the job and the order was given to the General Electric Company to go ahead with the turbine.

By this time it was the middle of February. A technical staff under R. C. Powell and C. E. Steinbeck was dispatched at once to Sacramento where measurements were made and the plant carefully examined. Night and day, Sunday and holiday work was put into the plans. Even before the ink was dry upon the paper, they were put into execution, orders for material given and construction under way. Indeed, in some cases, material was ordered ahead of time and the plans fitted into conditions as they went along.

The chief problem was the rush work required on the machinery. The turbine, which ordinarily would have taken six months to construct in the factory, was promised by the General Electric Company for June 6. As a matter of fact, it was delivered in Sacramento on May 16. The condenser, which was made by the C. H. Wheeler Company, was ready three days ahead of contract—and shipped on April 12. These are but samples of the seeming miracles which were accomplished. The factories put on 24-hr. shifts and worked their hardest.

One of the romances of the job is the account of how the great 16-ton turbine was shipped across the country by freight in two shipments of four and two cars which came across in nine and twelve days,



The new Sacramento Steam Plant of the Pacific Gas and Electric Company, which was entirely reconstructed and a 12,500-kw. unit installed in less than four months from the time the idea was conceived.

respectively—a time which is seldom rivalled by express shipments.

The General Electric Company put on their own tracer who travelled across the continent with the shipment, always a train ahead, arranging for connections at terminal points. Owing to some oversight in the routing, an unusual number of transfers from one road to another had to be made, but in spite of this difficulty, not more than ten minutes was lost at any one such junction, with the exception of Chicago, where the cars were delayed for an hour and a half. Inasmuch as the usual rule in this maze of railroad terminals is for cars to rest on a siding for two or three days, the delay was not considered excessive. At one point, the cars became separated and the tracer persuaded the railroad company to attach two of the ones left behind to an express train to bring them up together again. Another time, the entire train was run on passenger schedule to make up for a two-hour loss of time—this so that the cars with the turbine on board should not lose connections with a western bound freight at one of the transfer points.

The railroads offered every assistance—and at six in the morning on April 16, the turbine arrived and was spotted on the company's siding. In anticipation of its arrival, M. C. McKay, who was in charge of the construction work, had borrowed a wrecking crew from the Southern Pacific Railroad, who came down with their car from Marysville—and by twelve o'clock, noon, the turbine was resting on its foundations. It is believed that this constitutes a record for transcontinental freight shipment.

Other material was rushed in the same way. Pipe for the intake was fortunately located in stock

with the U. S. Cast Iron and Pipe Foundry and fittings were divided between four local foundries and completed in three weeks time. Company inspectors kept track of how the jobs were going and reported from one to the other so that a spirit of rivalry ensued which worked wonders in rapid accomplishment. The sheet metal could not be ready within a month, was the first report. But the companies were told that it had to be ready in a week's time. As a matter of fact, some of it was on hand for use within five days.

The preliminary work at the plant was in the meanwhile going forward. It was found that the entire plant had been designed for the addition of a 5,000-kw. turbine only and that in consequence all auxiliary equipment now proved inadequate. Where it could be used in the new set-up, it was invariably located inconveniently and had to be moved, so that fully double the work had to be done which would be required in installing an entirely new plant.

As part of the modernizing of the plant, the old smokestacks were removed and replaced with higher stacks—which meant that for the new and the old boilers, four 150-ft. new smoke stacks were required.

At the same time the smokestacks were being erected, a new circulating water intake was installed, together with alterations to the old circulating water system. This involved the installation of over 300 ft. of 48-in. cast iron pipe, as well as two large circulating pumps, complete with valves and fittings.

Of course, there were difficulties and backsets to the work, as when granite boulders were met with in dredging out the bed of the river to the required depth. Mr. McKay estimated that there was but one piece of machinery in the plant which did not have

to be moved. That was a small pump—and the men considered seriously the moving of that a few inches from its present position just to keep up the record. Transformer service had to be kept going, even while equipment was moved and of course, the old turbine placed back upon the line in as short a time as possible.

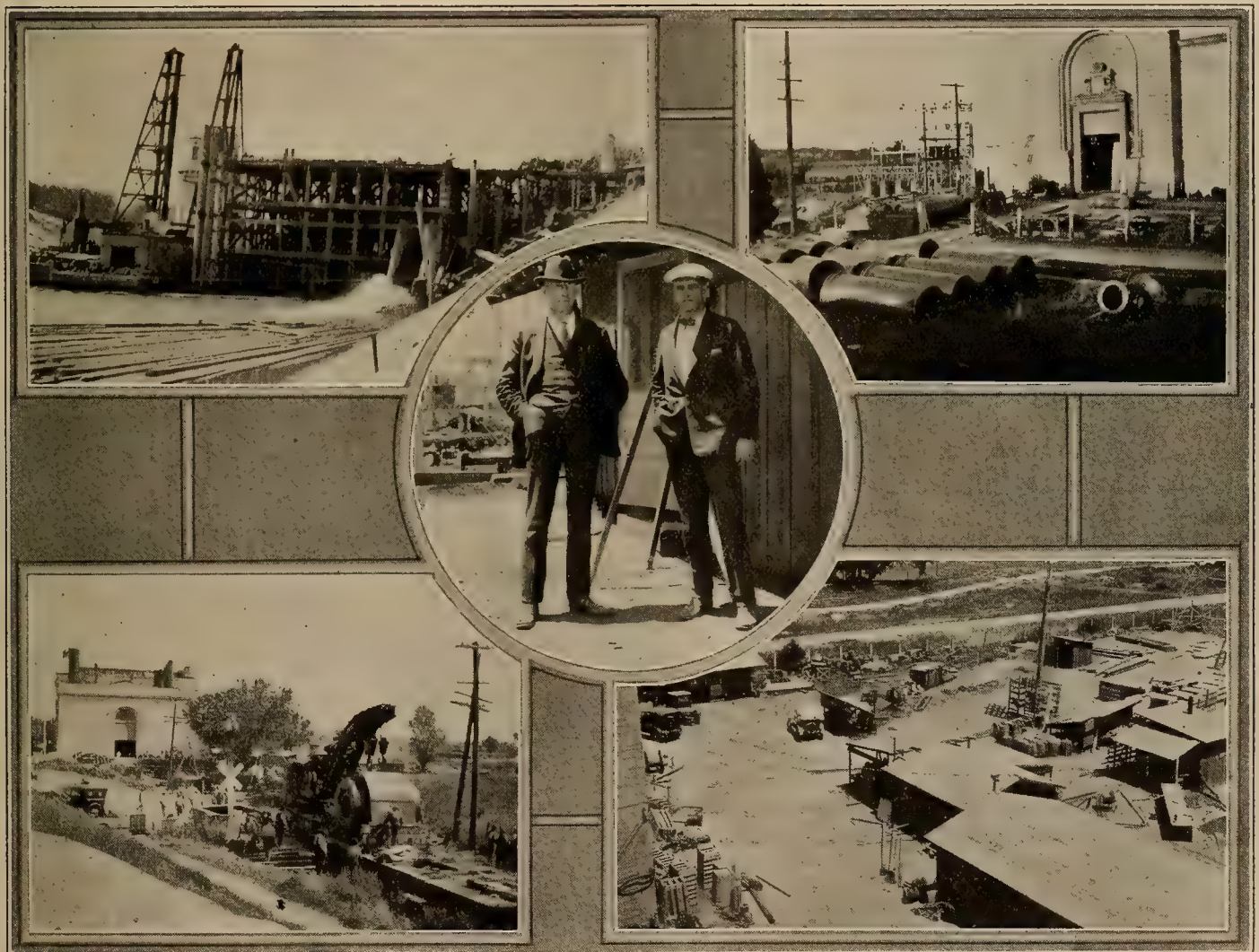
In general, the success of the work is due to the fine spirit and the organization of the men in charge of the work, much credit of which should go to M. C. McKay, engineer in charge of construction.

The key men on the work are old timers with the company—and they set the pace for the new comers. The spirit of friendly rivalry engendered and the willingness of all on the work to spend night and day to get the huge task done made for rapid accomplishment.

The old turbine was put into commission on June 8, just one month from the time the plant was shut down to permit of construction. The new machine was turned over for the first time on June 12 and placed in regular service at 5:30 a.m. June 15, since which time it has been carrying full load almost con-

tinuously. The installation operated entirely satisfactorily from the time steam was first turned on. This entire job was completed from inception to the power on the line in one or two days more than four months time—undoubtedly a record in steam construction. As has already been mentioned, the installation of a 12,500-kw. unit in the Oakland plant of the company in 1920, although considered at the time a rush job, took between eleven and twelve months for completion. In estimating when the present job could be finished, one of the company's engineers had calculated that under the most favorable circumstances, Sept. 1 was the earliest date which could be expected. The time was anticipated in practice by two months and a half.

Unit costs on the job have not yet been fully calculated, but the engineers in charge estimate that they will compare very favorably with work done under less rush conditions. Bonuses and overtime and crowded conditions, it is felt, will be in a large measure offset by the excellent spirit in the work and the high quality of service which has been secured throughout from the men on the job.



Views showing progress of the job. Top left, reconstruction of the intake was favored by low water but granite boulders proved irksome. Top right, 300 ft. of 48-in. pipe had to be laid and the old circulating system remodeled. Center, M. C. McKay, assistant engineer of general construction, who was in direct charge of the job, and C. E. Steinbeck, who with R. C. Powell, had a large part to perform in making the plans. Lower left, unloading the new turbine with wrecking equipment borrowed from the Southern Pacific Company. Lower right, the construction yards and office from the roof of the plant.



Electrical Construction

By E. Earl Browne

FIGS. 10 and 11 will serve to explain the point brought out in the article in the July 1, 1924, issue of Journal of Electricity. It is assumed that each outlet is to be for 150 watts and that four outlets are connected to each circuit. The ceiling height is assumed to be 12 ft. The building is of brick wall and wood joist construction (not plastered). All conduits to be run parallel to outside walls. The top of the panel cabinet is 6 ft. from the ceiling.

The proper procedure is to start as suggested with one group of four circuits and to run that group to its conclusion.

This length is noted in the column under 1 in.-8 No. 14 and in order to save time it is good practice to write the hori-

zontal runs in inches directly from the rule or map measure and the vertical runs in feet; thus in the case of circuits Nos. 1-2-3 and 4 the horizontal run is 1 ¾ inches (call it 2 inches) and the vertical rise is 6 ft. This is then written 2 + 6 as will be noted by referring to Fig. 11. The ¾ in. with 4 No. 14 wires measures 12 ¼ in. (call it 12 in.) and as there is no vertical run it is written 12 + 0. The ½ in. with 2 No. 14 wires measures 14 in. and as there is no vertical run it is written 14 + 0.

Having obtained these quantities for circuits Nos. 1-2-3 and 4, it is easy to fill the column for the balance of the eight circuits as the only difference is on the 1 in.-8 No. 14, which two lengths are quickly measured and noted as 4 + 6 and

ARCH'T		LOCATION		SCALE		ESTIMATE NO.	
OWNER		BID TO		DATE		HR.	
FLOOR		CEILING HEIGHT		OUTLET (WATTS)		SWITCHES	

7 + 6. The other two sizes are then merely copied from the first measurement and the total of each procured by simple addition of the several columns and multiplying the inch (horizontal) measurements by the scale of the plan, which in

this case was $\frac{1}{4}$ inch, and adding the vertical runs. Thus on the 1 in.-8 No. 14 there was a total of 13 in. This multiplied by four gives 52 ft., and adding 18 ft. for vertical run gives a total of 70 ft.

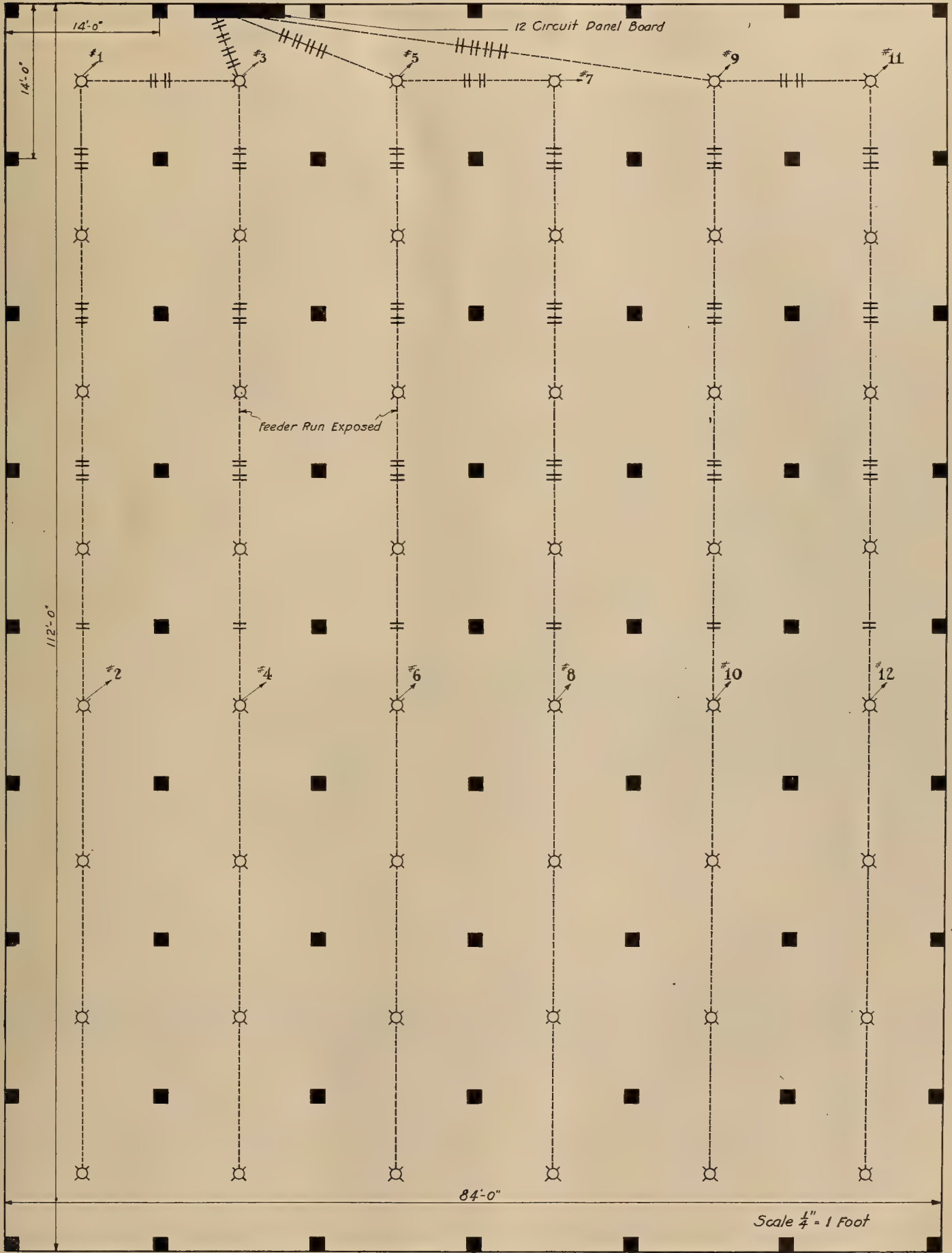


Fig. 10.

A Practical System of Accounting for Contractor and Dealer

By F. V. Mitchell

IN Fig. 1, reprinted correctly in this issue, attention was called to the fact in the July 1 issue of the Journal of Electricity that the amounts debited to Costs are credited directly to Merchandise and Labor Accounts, and that under this method no attempt was made to apportion the exact amount of overhead to each wiring or fixture job.

In Fig. 3 is outlined a detailed job cost sheet and, although this form can be used along with this same method of keeping the accounts, yet the proper proof of the accuracy of the data is not obtained under this method. Neither can the exact amount of overhead applicable to each job be ascertained, as only the general average for the department can be applied under this lack-of-proof method.

From this point will be taken up the readjustment of the chart of accounts necessary to include work in progress, unfinished contracts, and accrued pay roll, together with the proper method of procedure to furnish an accurate tie-up of all cost records with the general ledger accounts.

Under this more scientific and accurate method, the charges for all wiring and fixture work are debited to Accounts Receivable, account No. 3, and credited to unfinished contracts, account No. 16, at the time the contracts are received, or if labor and material jobs, at the time billed. The amount of finished work is automatically debited to unfinished contracts, account No. 16, and credited to sales, account No. 50, at the end of each month, ascertained from a form provided for that purpose. The credit balance of unfinished contracts, account No. 16, represents the selling price of contracts in process of completion.

The amounts of all material and labor used on

CHART OF ACCOUNTS

Assets	
Current	
General Ledger Account Number	
1	Bank Account
2	Petty Cash Fund
3	Accounts Receivable— (Finished) (Unfinished)
3A	Provision for Doubtful Accounts
4	Notes Receivable
10	Merchandise— (1—Wiring) (2—Fixtures) (3—Store)
15	Work in Process— (1—Wiring) (2—Fixtures)
16	Unfinished Contracts (Credit balance to be deducted from Total Current Assets in Balance Sheet)— (1—Wiring) (2—Fixtures)
Fixed	
20	Automobiles
20A	Provision for Depreciation
21	Furniture and Fixtures
21A	Provision for Depreciation
22	Tools and Equipment
22A	Provision for Depreciation
Liabilities	
30	Accounts Payable
31	Notes Payable
32	Accrued Pay Roll
Net Worth	
40	Capital Account
41	Personal Account
Revenues	
50	Sales— (1—Wiring) (2—Fixtures) (3—Store)
51	Returns and Allowances— (1—Wiring) (2—Fixtures) (3—Store)
52	Costs of Goods Sold— (1—Wiring) (2—Fixtures) (3—Store)
A—	Material
B—	Labor
C—	Overhead
Expenses	
(All Captions Subdivided)	
(1—Wiring) (2—Fixtures) (3—Store)	
Group 60 to 73	Overhead Expense Clearing Account
60	Advertising
61	Automobile Expense
62	Depreciation
63	Doubtful Accounts
64	Freight, Drayage and Express
65	Heat, Light and Power
66	Insurance
67	Interest and Discount
68	Miscellaneous Expense
69	Rent
70	Salaries
71	Stationery, Printing and Office Supplies
72	Taxes and License
73	Telephone and Telegraph

COMBINED CASH BOOK - JOURNAL						MONTH OF JUNE, 1924				
- BANK -				DATE	DESCRIPTION	CHG. NO.	Accounts RECEIVABLE		Accounts PAYABLE	
BALANCE	DEPOSITS	CHGS. DRAWN	DR.				CR.	DR.	CR.	
1				1924 June 7	Forwarded					
2					A. N. Brown - Wiring Job #20		862.50			
3					J. R. Smith - Fixtures Job #25		471.50			
5					Total Store Sales		263.45			
6										

Fig. 1.

WORK TO BE DONE
Moving 6-Room Apartment, Flats

DATE
May 15th, 1924

Job No.
485

LOCATION
1405 Olive St.

OWNER
JH Smith

BUILDER
IR Williams

BILL TO
IR Williams

ADDRESS
172 Main St.

WORKMAN'S NAME	MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	TOTAL HRS	RATE	Amount
H Brown	May															8	8	8	8	4													112	1.25	140.00
J Adams	"															8	8	8	8	4													112	.75	84.00
R Jones	"															8	8	8	8	4													112	.50	56.00
H Brown	June	8	8	4																													70	1.25	87.50
J Adams	"	8	8	4																													70	.75	52.50
R Jones	"	8	8	4																													70	.50	35.00
H Brown	July										8	4																					12	1.25	15.00
J Adams	"										8	4																					12	.75	9.00
R Jones	"										8	4																					12	.50	6.00
																																	TOTAL		360.00

MATERIALS USED			MATERIALS USED			MATERIALS USED			SUMMARY		
DATE	REQ. NO.	AMOUNT	DATE	REQ. NO.	AMOUNT	DATE	REQ. NO.	AMOUNT			
						7/1st	765	450.00	LABOR COST	22 1/2%	36.00
						7/1st	942	240.00	MATERIAL COST	44 1/2%	720.00
						6/2nd	1012	50.00	TOTAL PRIME COST	66 3/4%	1080.00
						7/11th	1435	45.00	SELLING PRICE	100%	1620.00
								785.00	GROSS PROFIT	33 1/4%	540.00
						7/14th	Credit	65.00	OVERHEAD	22 1/2%	375.00
								720.00	NET PROFIT	10%	162.00

Fig. 3.

jobs are debited to Work in Process, account No. 15, and credited to merchandise, account No. 10, and accrued payroll, account No. 32, respectively. The cost of all finished work is credited to work in process, account No. 15, and debited to cost of goods sold, accounts 52A and 52B, respectively, at the end of each month. The amount of overhead expense on jobs worked on during the month is debited to work

in process, account No. 15 and credited to overhead expense clearing account, group Nos. 60 to 73, at the end of each month; and account No. 15 is then credited and cost of goods sold, account No. 52C, is debited with the total amount of overhead on jobs finished during the month. The debit balance of account No. 15 represents the cost of all unfinished work at the end of each month.

GENERAL No. 1				GENERAL No. 2				GENERAL No. 3				GENERAL No. 4			
FIXTURES		SCORE		MISE-WIRING		MISE-FIXTURES		MISE-SCORE		LABOR					
DR.	CR.	DR.	CR.	DR.	CR.	DR.	CR.	DR.	CR.	DR.	CR.	DR.	CR.	DR.	CR.
250	175.00				289.35						191.65				
		471.50	225.75				176.80				58.95				
				263.45	184.40										

Fig. 1.

State Contractors' Body Holds Quarterly Meeting

California Organization Makes Trip to Pit River Development of Pacific Gas and Electric Company

One hundred and ten members and invited guests of the California State Association of Electrical Contractors and Dealers assembled at the quarterly meeting of the association at the Pit River No. 3 plant of the Pacific Gas and Electric Company June 28, 1924. Sixty-five per cent of those making the trip were members of the association and the balance was composed of invited representatives of the jobbers, central stations, manufacturers' agents and allied branches of the electrical industry. Seventy-five members of the party left in three special Pullman cars on Friday night, June 27, for Redding, where automobiles provided by the Pacific Gas and Electric Company were waiting to transport the party to the destination. Lunch was served at picturesque Burney Falls at shortly after noon and at that time those of the party who had arrived in their own automobiles joined with those who had made the trip by train. Many of those making the trip by automobile came from distant points as, for example, the delegation from Humboldt County which attended 100 per cent strong.

Immediately following lunch the entire party left for the Pit. Shortly after arrival, when time had been given for shower baths and resting, the party made a trip of inspection over the entire Pit 3 development under the guidance of G. M. Wehrle, manager of construction, Frank A. Leach, Jr., vice-president and general manager, and R. E. Fisher, vice-president in charge of public relations and sales, of the Pacific Gas and Electric Company. The party first visited the dam site where the development plans were outlined and where the actual dam construction work was observed. Following this a special train was run into the easterly adit to the tunnel that is to be used to turn the waters of Pit River from the natural river bed. The work of rock drilling, steam shoveling and muck removal proved an interesting example of systematized effort. Progress on the tunnel is being made at the rate of

eleven feet per day at each of the six adits, making a total progress of about sixty-six feet per day. In view of the character of the soil formations encountered this is considered rapid excavation.

Dinner on Saturday evening was featured by music and singing. Several new songs, with original words written for the occasion and set to popular tunes of the day, were introduced and sung by the entire gathering. These songs were also repeated at the close of the business meeting.

Following dinner on Saturday, June 28, the business meeting was held, attended by all those who had made the trip. The meeting was called to order by R. E. Fisher who introduced Frank A. Leach, Jr. Mr. Leach spoke briefly and then presented G. M. Wehrle who gave a detailed outline of the general development plans of the entire Pit River project. Following Mr. Wehrle Victor Lemoge, president of the association, presided over the meeting and introduced other speakers. Among the addresses were a short talk by A. E. Rowe, San Francisco, Calif., I. C. Steele, chief of the department of civil engineering, Pacific Gas and Electric Company, and Laurence R. Chilcote, secretary-manager of the Electrical Contractors' and Dealers' Association of Alameda County. Mr. Chilcote touched on several important subjects, chief among which was the matter of cooperative advertising. He presented samples of joint advertisements to illustrate his talk and cited some of the good results that had been achieved in certain sections where the plan had been tried out. The addresses were followed by prize drawings, the tickets for which had been distributed at the evening dinner. The proceeds of the prize contest are to be devoted to the purchase of baseball equipment for use at the annual convention of the association to be held at Santa Cruz, Sept. 19-21. Immediately following the business meeting the party broke up to indulge in games of various sorts.

Shortly after breakfast on the morning of the twenty-ninth the members of the party boarded two special trains on the private railroad of the Pacific Gas and Electric Company and were transported to the Pit No. 1 plant for a tour of inspection. This tour took up the entire morning and included a careful explanation of all operating features of the Pit development and an opportunity to witness the entire cycle of operations of a modern hydroelectric generating station. Upon return to the Pit 3 headquarters lunch was served and the party then left by automobile for Redding, where the members of the party were guests of the Pacific Gas and Electric Company at a banquet at the Hotel Lorenz.

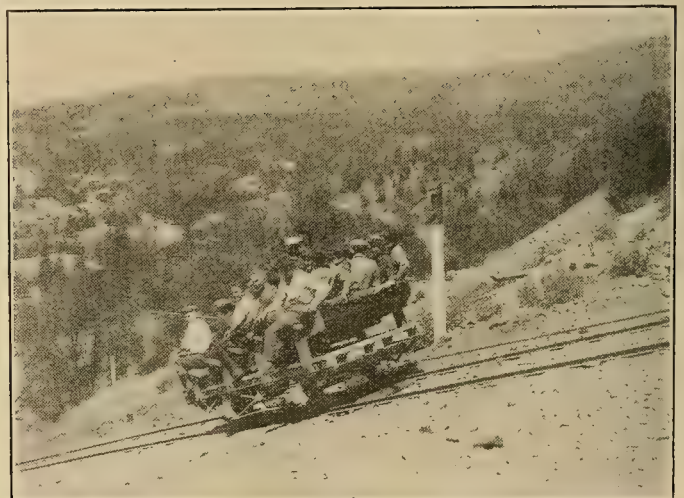
The special cars of those who traveled by train were attached to Southern Pacific train No. 13 and arrived in San Francisco at eight-fifteen on Monday morning, June 30. The special cars of the party were under the charge of E. J. Harris, traveling passenger agent of the Southern Pacific Company, who exerted every effort to make the railroad portion of the journey unusually pleasant. Midnight lunch was served on the train both on the going and return trip. Walter F. Price, executive secretary of the California State Association of Electrical Contractors and Dealers, had charge of the general program and made the major arrangements for the trip.

The annual convention of the association will be held at Santa Cruz, Calif., on Sept. 19-21, 1924, and will be the occasion for a program of more than usual interest. In addition to several notable papers to be delivered by specialists in the subject on which each will speak there will be an elaborate program of sports events. It is expected that the attendance will exceed that of any convention yet held.

R. B. Bragg, for many years chief clerk and manager in various district offices of the Pacific Power & Light Company, Portland, Ore., has recently been promoted to be district manager at Walla Walla, Wash. Mr. Bragg was formerly manager of the Pasco-Kennewick district.



Left to right, R. E. Fisher, vice-president in charge of public relations and sales, Pacific Gas and Electric Company; Victor Lemoge, president, California State Association of Electrical Contractors and Dealers, and Frank A. Leach, Jr., vice-president and general manager, Pacific Gas and Electric Company, at Pit 3 power house site.



Members of the California State Association of Electrical Contractors and Dealers on cable railway at Pit 1 power house of Pacific Gas and Electric Company, descending from forebay to power house on recent meeting held at Pit River, after inspection of intake, surge chamber, control valves and power house.

Dealers Install Electric Heaters For Use in Elevators

A field of sales possibilities is opened to dealers through the sale and installation of low wattage heaters for electric elevators or for use in any elevator that is electrically lighted. The common practice is to use a heater of not greater than 600 watts capacity and to install the device either close beside the operator or in a corner of the opposite wall of the elevator car. On account of the fact that this load is practically continuous during the entire



Method of installing electric heaters in elevators to ensure maximum comfort for operator.

business day it is not necessary to have a heater of great capacity, all that is desired being to remove the chill from the air of the car. Heaters may be obtained that can be fastened to the wall of the elevator and that take up very little room. By means of such an installation operators are enabled to work in comfort and passengers are greeted with an agreeable warmth upon entering the elevator. The accompanying illustration shows an installation made by a dealer, of an electric heater in an elevator, the location being close beside the operator.

Electric Railroad Operates in Yosemite Valley

Yosemite Valley's first railroad operated by electricity is now completed and running daily. Its passenger service is limited to children, and it is one of the new features in the "Kiddie Kamp" at Camp Curry, the well known resort in the Yosemite Valley. The engine and tender of the railway were designed by Charles Matthews, chief electrician at Camp Curry, as was the method of its operation. This electric locomotive uses a $\frac{3}{4}$ -hp., 110-volt motor, and operates on the third rail system. The rail is safely guarded and is automatic. A fence on both sides guards the railroad, and the train will not start until the gate through the fence is closed by the attendant in charge

of the playground, thus automatically opening a switch. The engine will pull a load of 350 pounds at a speed of seven miles per hour.

Accounting Problem Questions Answered by Expert

The Journal of Electricity has made arrangements with F. V. Mitchell, public accountant of San Francisco, to answer, in these columns, such questions as may be asked on accounting. All readers are invited to forward their inquiries to The Editors, Journal of Electricity. The answers will be published as soon as possible following the receipt of the inquiry.

Question:

Is it in line with good business practice to consider that a larger-sized job should carry a lower percentage of overhead than the average, in arriving at a figure for contract bid purposes?

Answer:

It is very dangerous to consistently favor the larger-sized job by arbitrarily assessing a lower percentage of overhead than the average against it, as it must be taken into consideration very clearly that the larger jobs included in with the total volume have been the cause of reducing the average percentage of overhead as low as it is.

Meeting of Vacuum Cleaner Men at Spokane, Wash.

Fifty men and women from various points in the Inland Empire engaged in electrical sales work were the guests of the Eureka Vacuum Cleaner Company at a banquet given at the Davenport Hotel in Spokane, Wash., on May 2. R. B. Carter, district manager of the Eureka Vacuum Cleaner Company, Spokane, was the toastmaster at the banquet and introduced A. L. McCarthy, vice-president and general manager of the Eureka Vacuum Cleaner Company, as the principal speaker. In his address Mr. McCarthy brought out the value of national advertising as well as the low cost of such advertising.

J. B. Tubergen, Pacific Coast factory representative of the Eureka company, with head offices in San Francisco, was a guest at the meeting. Members of the sales staff of The Washington Water Power Company were also present at the meeting.

Standard Meter Box Adopted by Sacramento Electricians

A standard meter box to be used in homes having a lighting service only has recently been adopted in Sacramento, Calif. The new box was designed by representatives of the Great Western Power Company, the Pacific Gas and Electric Company, the City Electrical Department, and the Electrical Contractors' and Dealers' Association. It is essentially a wooden cabinet 13½ in. by 24 in. by 8 in., with a sloping roof. The roof and door are made of



Standard meter box developed by the combined electrical interests of Sacramento, Calif.

redwood and the balance of pine. It is so designed that with minor changes it can be placed outside of the building, semi-flush, or entirely flush.

Radio Booklet Published.—The Department of Commerce, Bureau of Standards, has just issued the second edition of Radio Instruments and Measurements. This is a technical treatise on radio apparatus theory, construction, and operation. The booklet, which comprises 345 pages, may be had on payment of sixty cents to the Superintendent of Documents, Government Printing Office, Washington, D. C.



Right, Charles Matthews, chief electrical engineer, Camp Curry, standing beside electric train of his invention and which was manufactured under his supervision. The other illustration shows some of the juvenile visitors to the Yosemite Valley enjoying a ride on the only electric train in the valley.

JOBBER, DEALER AND SALES AGENT



HAMMER-THROWING LESSON FOR BUSINESS ATHLETES

By JOE OSIER

Once upon a time, as the Associated Press story goes, a small boy, for fun, sport and amusement, threw a hammer in the air and went about his play—

But soon the hammer came down, as Sir Isaac Newton, or anybody for that matter, could have told him—

And the small boy was taken to an emergency hospital where a doctor, an interne and a trained nurse pried the dent out of his silly little head and sent him home to the palpitating breasts of his fond parents and—



Willie learns for the first time that suspended animation doesn't work.

Calling to mind this incident prompts me to ask: How many business men, masquerading as leaders in the electrical industry, are tossing hammers in the air, recking not where they fall?

I mean hammers of shiftlessness; hammers of absolute indifference; hammers of excessive costs and hammers of greed and graft.

There are some, I feel sure, and these witless ones, whether they know it or not, are aiming themselves for reserved benches in the park called business oblivion and—

Some sweet day, in the not far-distant future, they will be idly sitting on these selfsame benches, moaning in each other's ears tales of how they exchanged their birthrights for messes of unsalted pottage.

These thoughts are not the vaporings of a vacant mind, even though they are typed by the young sprout who threw the hammer. They are facts and—

The judges who are making history in the electrical industry today will gladly accept my testimony as—

Relevant and material.

Show me a man in the business who is running his affairs in a haphazard way and I'll show you a Dud who ducks when he hears the word "banker."

Show me a man who is indifferent about his store, his stock, his windows, his employees, his customers, and I'll show you a Bird whose bond is not worth a whoop in the naughty word.

Show me a man in the game who wants the world and five strands of triple braid, weatherproof, copper wire around it and who thinks—

Prosperity is spelled g-r-a-f-t—

And I will point out a person whose little roundabout will be filled with wild winter winds before he exits out of the picture.

And so I say: Throw the hammer if you feel sportive—if you are full of fun and frolic, but see to it that the tool is weighted with—

Ambition, enthusiasm, thoughtfulness, thriftiness and—

When it comes down, alighting on your hilarious head, its touch will be as free from harm as the caress of a feather.

New Sales Policy Marks Opening of Dealer's New Store

A larger and more modern store has recently been opened at 1118 J Street, Sacramento, Calif., by F. H. McGinnis, whose electrical appliance business had completely outgrown its former quarters at 906 J Street. He specializes in washing machines, vacuum cleaners and Mazda lamps, selling also ironers and small appliances.

With the opening of the new store Mr. McGinnis has inaugurated a new sales policy in that he has entirely eliminated house-to-house canvassing and substituted direct-by-mail advertising in conjunction with newspaper advertising. A regular program of demonstrations is to be carried out, a certain type of washer or vacuum cleaner being shown on a specified day at a definite time. The circularization campaign will be tied in with these programs. The main door of the store is set back so as to provide space for demonstrations directly off the sidewalk. It is planned to have three or four proven salesmen sell out of the store on prospect lists.

Lighting Fixture and Glassware Display Draws Crowd

The Pacific States Electric Company, Los Angeles, Calif., in cooperation with the Albert Wahle Company and the Ivanhoe Division of the Edward Miller Company, recently conducted a Lighting Fixture Show in the Biltmore Hotel, Los Angeles, during an entire week.

Lighting fixtures of the latest design and for every purpose were exhibited throughout the entire show. The iridescent glazed pottery in shades of blue, brown, orange and lavender was the center of attraction, and much interest was also shown in the decorative glassware. Two thousand invitations had been mailed to contractor-dealers, fixture dealers, architects and engineers, and some seven hundred persons visited the exhibit during the six days it was open.

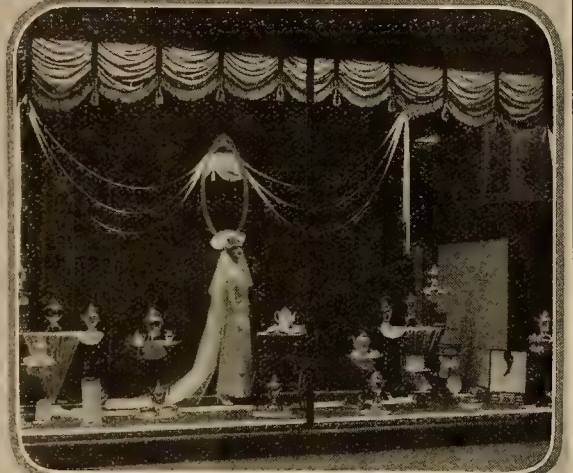
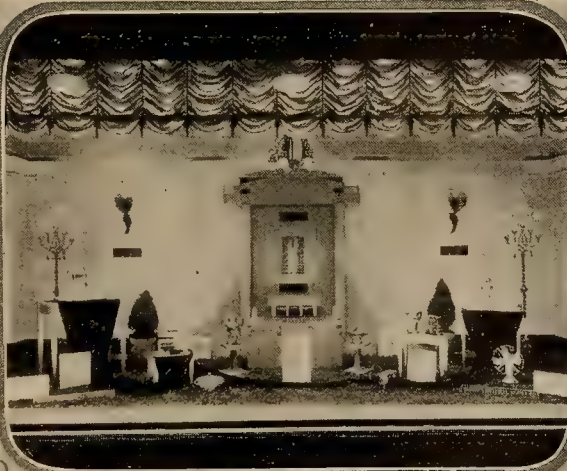
Cooperative Campaign Announces June Bride Prize Winners

More than fifty per cent more dealers throughout the state entered the 1924 June Bride Week window display contest conducted by the California Electrical Cooperative Campaign than engaged in the similar contest for 1923. Interest was stimulated by the material furnished for window trimming and by the friendly competition for cash prizes offered for those windows decided by the judges as combining the most thorough display of the electrical wedding gift idea, the greatest sales appeal and the most artistic ability and ingenuity in arranging the window.

The first prize was \$25; the second to sixth prizes, inclusive, were \$10 each and the seventh to eleventh prizes were \$5 each.

In order to ensure impartial decisions as to the prize awards and to have the decisions made by the most competent authorities possible Victor W. Hartley, executive secretary of the Campaign, engaged three advertising men for judges. After full consideration of all photographs submitted these men, Vernon Churchill, of Honig-Cooper Company, San Francisco; W. W. Cribbins, of Young & McCallister, Inc., San Francisco, and Ben Dixon, of Schmidt Lithograph Company, San Francisco, unanimously decided as follows:

1. Valley Electrical Supply Company, Fresno
2. Thomas Day Company, Oakland
3. Hamburger's, Los Angeles
4. Hensel Electric Store, Los Angeles
5. Chaffee's Electric Shop, Visalia
6. Southern Electrical Company, San Diego
7. H. L. Miller Company, Pasadena
8. J. C. Hobrecht, Sacramento
9. Hedman-Johnson Hardware Company, Turlock
10. Chamberlain Electric Company, Santa Paula
11. Sutter Electric Company, San Francisco



SOME of the prize winners in the 1924 June Bride Week window display contest conducted by the California Electrical Cooperative Campaign. Top center, Valley Electrical Supply Company, Fresno; upper left, Thomas Day Company, Oakland; upper right, Hamburger's, Los Angeles; lower left, Hensel Electric Store, Los Angeles; lower right, Chaffee's Electric Shop, Visalia; center, Southern Electrical Company, San Diego. More than fifty per cent more dealers took part in the 1924 campaign than in 1923. Dealers report that sales were greatly stimulated as a result of increased consumer interest.



INDUSTRIAL NEWS



Bone Bill Petition Signatures Amount to 62,533

Petitions carrying 62,533 names for initiative measure No. 52, known as the Bone "Free Power Bill," were filed with Secretary of State J. Grant Hinkle at Olympia, Wash., July 3. This number of signers represents a substantial margin over the 39,941 bona fide signatures required to place the measure on the ballot in the November election.

Briefly, the measure would permit cities and towns to sell electric current either inside or outside their corporate limits without either the seller or purchaser of such electric current being subject to tax on account of the purchase or sale. In addition, such municipalities would be authorized to construct power plants and all the necessary appurtenances and to exercise the right of eminent domain in such construction.

The opponents of the measure look upon it as an attempt on the part of the cities of Seattle and Tacoma, which have municipal power systems, to make the rest of the state bear some of the burden of these systems and to provide a market for the Skagit development soon to be put in operation by Seattle. The fact that over 40,000 of the signers of the petitions were residents of these two cities would seem to support this contention.

The campaign carried on by privately owned utilities to secure withdrawal of names from these petitions, though highly successful, has been abandoned because the secretary of state is unwilling

Colorado Utilities Commission Enjoins Municipal Plant

Suit has been filed in the Larimer County district court by the State of Colorado and the Colorado Public Utilities Commission against the city of Loveland seeking an injunction against the city council to prevent the erection of a municipally owned light and power plant. The action is being taken because the city has sold the \$1,250,000 in bonds voted at an election in May and has let a contract to the Hendrie & Bolthoff Manufacturing & Supply Company of Denver for the construction of the plant in the face of an order denying the city of Loveland a certificate of convenience and necessity.

It is understood that the city is going ahead on the assumption that a recent decision of the Colorado Supreme Court has removed all supervision of municipally owned utilities from the Public Utilities Commission. Several months ago the Supreme Court ruled that the commission had no jurisdiction in regulating rates and charges in the case of municipally owned utilities and the city

has interpreted this to cover all phases of municipal utility activity.

In the order denying Loveland the authority to construct a plant the commission held that the residents of the town are getting good service at present at a much lower cost than would be possible if the city built a plant.

Directors of the Colorado Springs Light, Heat & Power Company, which formerly served the town and which was denied an extension of its franchise, are en route to Loveland to deal directly with the city council in the matter of disposing of the properties of that company to the city.

Bill to Abolish Oregon Public Service Commission Fails

The proposed initiative measure providing for the abolition of the Public Service Commission of the State of Oregon has been rejected and will not appear upon the ballot in the November election, according to a statement issued July 7 by Sam A. Kozar, secretary of state. The statement which was issued in the form of a letter to the sponsors of the measure on completion of a check of the petitions filed July 3, set forth the fact that only 10,267 of the 17,000 signatures submitted had been certified by the various county clerks as required by law and that the remainder which were not so certified could not be counted. He stated that approximately 13,500 certified signatures were required to initiate a measure at the coming election and that since these petitions fell short of that number the measure could not go on the ballot. Considerable interest was aroused in the petitions when three days before the time they were to be filed the paid circulators struck for higher wages. They were receiving 4 cents per name at that time and sought 10 cents. Their request was not met with so that the petitions were not circulated during the final days of the campaign to secure signatures.

Great Northern Planning to Electrify Western Section.—Electrification of the western section of the Great Northern Railway, which has been under consideration by officials for several years, will begin with an 80-mile section spanning the Cascade Range, according to an announcement made by L. C. Gilman, vice-president, in Seattle recently. The initial work will cost approximately \$4,000,000. It is the ultimate aim of the company to electrify the entire section between Skykomish and Wenatchee. At many points the line of the Great Northern parallels that of the Chicago, Milwaukee & St. Paul which has been electrified for a number of years.

Next N.E.L.A. Convention to Be Held on Coast June 15, 1925

Either San Francisco or Portland will be the scene of the next annual convention of the National Electric Light Association, which will be held during the week of June 15, 1925. Considerable doubt exists at the present time as to which of these two cities will ultimately be chosen. At the recent meeting of the Pacific Coast Electrical Association at Coronado an invitation was extended to the officers of the association to hold the meeting in San Francisco and to date telegrams have been received at the national headquarters from the mayor, the San Francisco Chamber of Commerce and other organizations urging the convention to come to that city. On the other hand the claims of Portland, the home of Franklin T. Griffith, president of the association, cannot be overlooked. If after a thorough canvass of the hotels the Portland Chamber of Commerce finds that suitable accommodations can be guaranteed, the convention may go to Portland. President Griffith is naturally anxious to have the convention held in the Rose City but is reconciled to San Francisco if Portland cannot accommodate the meeting.

San Francisco Will Sell Water to Irrigation Districts

The city of San Francisco will sell 100,000 acre-ft. of water to the Modesto-Turlock Irrigation District at \$1.50 per acre-ft. for the purpose of supplying the district's irrigation and power needs during the water shortage. This amount represents about one-half the supply now stored behind O'Shaughnessy Dam in the Hetch Hetchy reservoir.

M. M. O'Shaughnessy, city engineer of San Francisco, estimates that the remaining water impounded in Hetch Hetchy reservoir will be sufficient to operate the 100,000-hp. Moccasin Creek plant when it is commissioned early in 1925. Only enough water remains in the Don Pedro reservoir to carry the irrigation districts through July and there was danger of an acute water and power famine unless water was obtained from San Francisco.

North Bend Plant Progressing.—The Mountain States Power Company at North Bend, Ore., has laid the foundation for its \$700,000 power plant, the work having been done under the supervision of George F. Pythian. Heavy shipments of steel are expected within thirty days, as large quantities are to be used. The new structure is to have a steel frame surrounded by concrete walls. It is planned to have the plant completed by the end of the year.

Commission Holds \$16,000,000 Is Sufficient for Power Bureau

Engineers of the California State Railroad Commission have reported to the Los Angeles Public Service Commission that sixteen million dollars will be needed altogether during the next three years by the municipal Bureau of Power and Light to bring its distributing system up to capacity and to provide for extensions and betterments to meet new demands during that period. A survey of the city's system was made by the railroad commission at the request of the city following the defeat of the twenty-one million dollar bond issue in June.

The report contains estimates by both the engineering and financial departments of the railroad commission. It recommends one bond issue of sixteen millions to be made available as follows: Seven millions upon approval of bonds by voters, five millions on July 1, 1925, and four millions July 1, 1926. In arriving at the figure the commission declares that it has taken into consideration, among other things, that the municipal system must make extensions of present transmission lines to serve the harbor district; that it must connect its lines with the steam plants of the Southern California Edison Company in order to improve service conditions and that it must ultimately construct a belt transmission line in the western portion of the city.

The report is explicit that the estimates submitted do not in any way include funds which might be used in acquiring the electric system of the Los Angeles Gas & Electric Company or of extending municipal lines into territory already served by that utility.

Contract Let for Denver Radio Broadcasting Station

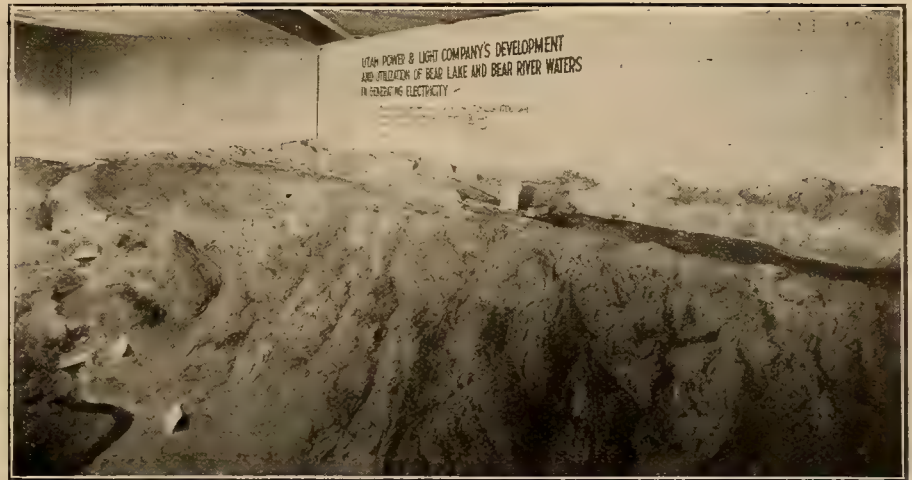
The contract for constructing the new radio broadcasting station of the General Electric Company in Denver, Colo., has been awarded to C. S. Lambie Company of Denver. The contract calls for the construction of two buildings, to be known as the power house and the studio building. The cost of the grounds, buildings and equipment will be approximately \$175,000.

Work on the buildings will be started immediately and according to H. D. Randall, district manager of the General Electric Company, the new station will be on the air by Oct. 15, 1924. The Denver station of the General Electric Company will be the third of the stations operated by that concern, the other two being located at Schenectady, N. Y., and Oakland, Calif.

Great Western Power Has Large Construction Program

Approximately one million dollars is involved in the construction program of the Great Western Power Company, now nearing completion. The work done under this plan has all been undertaken and will be completed within twelve months. It has been made necessary by the increased demand for service from this company.

At the Golden Gate substation, San Francisco, Calif., a 30,000-kw. synchronous condenser is being installed and will be completed within sixty days. This is said to be the largest machine



Display of the Utah Power & Light Company at the Utah State Fair.

of its type ever manufactured. Additional transformers will also be installed at this station together with the necessary bus structure, switches and connecting towers. At the same time a double-circuit steel-tower transmission line is being built from Valona substation to Golden Gate, adding another link in the 200-mile steel tower line from Caribou.

Automatic transformers have been installed at Brighton, Calif., substation which serves the city of Sacramento, this work being a part of the general rebuilding of the entire Sacramento distribution system. In order to make possible an interchange of energy between the Caribou and the Las Plumas transmission lines to the Bay regions a 40,000-hp. transformer bank is being installed at Las Plumas. This work will be completed within a few weeks.

All-Electric Ship to Be Built For Matson Company

A contract has been awarded to William Cramp & Sons' Ship and Engine Building Company, Philadelphia, Pa., for the construction of a fast mail, passenger and cargo liner for the Matson Navigation Company of San Francisco, Calif. The new ship will require two years to build and will cost between \$4,750,000 and \$5,000,000. The specifications call for a length of 578 ft. over all and 76 ft. beam with 21,000 shaft horsepower.

The motive power will be turbine-electric, consisting of two Curtis turbines with a total of 20,000 hp. and these will be supplied from water tube boilers burning oil. The turbines will drive two alternating current generators, each of 7,700-kw. capacity, which in turn will drive two General Electric synchronous motors of 10,000 hp. These motors will be direct connected to the propeller shafts.

Electricity will be used extensively throughout the ship for lighting, elevators and other purposes.

Engineering Employees Inspect Power Project.—Twenty-one employees of the engineering offices of the Lake Cushman power project in Tacoma, Wash., recently spent a day inspecting the power site on the Skokomish River where work is progressing under the direction of J. L. Stannard, chief engineer.

Utah Company Presents Model of Project at State Fair

A special exhibit by the Utah Power & Light Company in the University of Utah building at the Utah State Fair, held at Salt Lake City, Utah, proved to be one of the most attractive features of the exposition. The company's development and utilization of Bear Lake and Bear River waters were presented by means of a panoramic reproduction, moulded in plaster, of the lake, the river and contiguous territory, from the inlet and outlet canals and Lifton pumping plant on Bear Lake down to the Great Salt Lake.

Miniature buildings represented all of the company's power plants along Bear River. Water was actually shown flowing through the inlet canal into Bear Lake, and out again through the outlet canal, and on down the river. By the use of a small electrically-operated pump, hidden from view, the flow of water was maintained continuously. Small signs were posted, giving information regarding the inlet and outlet canals, Bear Lake, Lifton pumping plant, and all of the generating stations on Bear River.

One of the company's employees was on hand to explain to the public the method of water equalization, how the fall is utilized, and to furnish general information regarding the company's system. A space 11x21 ft. was used for the exhibit.

Company Seeks Queets River Permit.—Contemplating a million-dollar hydroelectric power development on the Queets River in Jefferson County, Wash., the Grays Harbor Railway & Light Company of Aberdeen, Wash., has filed application with the state supervisor of hydraulics, Marvin Chase, for an appropriation from the river of 34,000 cu. ft. per sec. The company plans a primary development of 10,000 hp., with a second 10,000-hp. unit to be built later. It is proposed to build a concrete dam 50 ft. high by 700 ft. long across the Queets River, below its confluence with the Clearwater, and to impound the waters of both rivers for a considerable distance upstream. The main pipe line will be 4,000 ft. long. This application is the third of a series made by the company to protect its interest in Grays Harbor and Jefferson Counties. P. A. Bertrand is manager of the company.

Colorado Company Has Extensive Development Program

Among the improvement programs of central stations in the Rocky Mountain region, one of especial interest because of its extensive service in suburban territory adjacent to Denver, is that of the Arapahoe Power & Light Company operating through two principal offices at Englewood and Littleton, Colo.

According to W. C. Sterne, general manager of the company, who was a recent San Francisco, Calif., visitor on his way to Honolulu, over \$50,000 will be spent on the program which has as its major features:

New transmission line of 5½ miles from Loreto Heights to Morrison road.

Third phase to present line serving water filters at Marston Lake.

New substation at Englewood.

Revamping entire distribution system at Englewood so as to complete 3-wire service.

Revamping substation at Military Junction.

Connecting all branches of company transmission lines so as to insure duplicate service at any point.

Thomas McGrath, local manager of the company, is in charge of the work.

Contract Awarded for Cushman Power House Foundations

On a second call for bids, the city of Tacoma, Wash., has awarded to A. Guthrie & Co., Portland, Ore., contract for construction of foundations for the power house of the Lake Cushman project, on a bid of \$118,425. The contract was awarded to this company who are the contractors on the big Lake Cushman dam, over a lower bid by S. C. Erickson of Tacoma, on the basis of the ability of the contractors to begin work immediately and insure completion before high water in the river. In the first call for bids, the low bid was declared irregular, and the other bids were too high. The work involves a power house with concrete substructure, reinforced concrete superstructure, hollow tile partitions and steel sash window frames. The appurtenant works include two 10-ft. diameter welded steel penstocks 127 ft. long each, foundation excavation and tail race excavation, the two latter jobs involving 6,000 cu. yd. of common excavation, and 5,800 cu. yd. of rock excavation.

Portland Utility Collects Large Pile of "Hog Fuel"

Because of the extensive operations of the lumber mills in the vicinity of Portland, Ore., the Portland Railway Light & Power Company, during the

present summer has accumulated one of the largest piles of "hog fuel" that it has ever had. In the accompanying illustration a view of the pile from the front side is shown. The pile covers several acres and contains 35,600 units of 200 cu. ft. each, or 7,120,000 cu. ft. of "hog fuel." Under average burning conditions each unit will produce 400 kw-hr.

"Hog fuel" is sawmill waste and contains sawdust and trimmings from the mill. Everything but the sawdust and shavings is put through a hog and reduced to small size for burning in the dutch ovens. "Hog fuel" is the principal fuel used by the Portland Railway Light & Power Company in its steam plants. Specially designed furnaces are used to obtain the best efficiency.

The greater part of the fuel that is shown in the accompanying photograph is carried direct from the mill to the pile by a system of conveyors. A rake operated by a series of cables is used for piling. A 100-hp. slip ring motor drives an electric hoist which furnishes the motive power for the rake. Fuel is carried from the pile to the furnaces by a separate system of conveyors.

Electricity Used for Pumping Oil in Colorado Fields

Several oil wells are being pumped on the beam by electrically driven equipment on the properties of the Midwest Refining Company in the Salt Creek, Colo., field. Energy is generated at the field and is carried to individual motors on each derrick. The generating plant is located six miles from the home camp. At the present time there are installed two boilers with superheaters but the capacity of the plant is being increased and the new construction is expected to be completed late this year.

Natural gas is used for fuel and is piped from the wells to the boiler room. The initial capacity of the plant will be 25,000 kw. but this will be increased as needed. Transmission towers and lines have been erected and it is the plan to ultimately motorize all wells that have either stopped flowing entirely or that are making only a small barrelage. The production of such wells has been increased by the use of electric motors and, in one case, the daily well flow has been raised from 60 barrels to 700 barrels.

The Midwest Refining Company is now a subsidiary of the Standard Oil Company.

Annual Report of Great Western Power Company Is Issued

Gross operating revenues of \$7,123,970 for the year 1923 and a profit of \$4,778,452 from operations is shown in the annual report of the Great Western Power Company of California, made public recently by Mortimer Fleishacker, president of the company. The report reflects a successful year, with an increase of 5,715 consumers using Great Western power and a net gain in connected load of 47,551 hp. Deduction of interest on funded debt, provision for renewals and replacements, income tax and other charges left a net income of \$1,315,915, the statement shows.

At the end of 1923 the company was serving a connected load of 417,519 hp. and delivering energy to 46,724 consumers. The gain in connected load during the year was at the rate of 12.85 per cent.

Of the gross operating revenues, \$6,754,410 was derived from the sale of electric energy and the remainder came chiefly from the sale of steam for heating purposes in San Francisco and Oakland and the sale of water and of electrical apparatus.

A healthy increase in every department is indicated by the report. Revenues from the sale of electric energy for lighting purposes totaled \$2,361,654, as compared with \$2,179,595 in 1922. General power revenues were \$3,399,332, an increase of \$115,480. Returns from the sale of energy for cooking and heating amounted to \$183,670, an increase of \$66,493. The sale of power for the operation of electric railways produced a revenue of \$329,013, a substantial increase over the previous year. ling to give the names of the petitioners to the utilities, giving as his reason the fact that such action would create too much confusion in his office. The efforts of the utilities affected by this measure will now be actively directed toward defeating it at the November election.

By a ruling of the secretary of state one representative each of proponents and opponents will be allowed in the room where the preliminary survey and official canvass of the signatures is made, and these watchers must have proper credentials from him.

As required by statute, a sworn affidavit of the expense incurred, the money received and the sources from which the money was derived was filed by Homer T. Bone, author of the measure. The total subscriptions, contributed in small sums, amounted to \$1,682.55 of which \$1,473.41 was expended.

Columbia Valley Power Company Making Survey.—The Columbia Valley Power Company is making the preliminary survey for the proposed power line across the mountains. This work is under the supervision of R. D. Cooper. A 50-year license has been granted to the company by the federal government. The project will include two units of development. The first unit will consist of a masonry dam 160 ft. high, at which it is proposed to develop 51,000 hp. at the point designated as the Pelton site; the second unit will consist of a masonry dam 50 to 350 ft. high at the so-called Metolius site about eight miles farther up the river and will have a capacity of 400,000 kw. The company will have to build only about 45 miles of new line in order to connect up with their main line.



Pile of "hog fuel" at one of the main steam plants of the Portland Railway Light & Power Company. This pile contains enough fuel to produce 14,240,000 kw-hr.

Denver Electrical League Starts Fourth Year of Activity

Reports from Denver indicate that the Electrical Cooperative League operating in that city and suburban territory has entered its fourth year of activity in vigorous fashion. Following the adoption of a program for the new year, which started July 1, and the election of officers, the League engaged in a membership drive, the object of which was to insure the underwriting of required funds during the first month of the new year. According to S. W. Bishop, executive manager, over 80 per cent of the quota was raised during the first week of July and the campaign has now centered itself in an effort to secure the assistance of as many manufacturers and contractor-dealers as possible. It is understood that the utility companies and jobbing interests are already pledged 100 per cent. The annual report of the League, reviewing the aims, objects, and accomplishments of the organization will be off the press shortly.

Mazda Lamp Prices Are Reduced 10 Per Cent

According to announcements from the various headquarters, prices on Mazda lamps were again reduced, effective July 1. Price reductions amount to about 10 per cent and the new prices are effective throughout the United States and are common to all Mazda brands.

The latest reduction is the fifth in twenty-seven months, and the second since February of this year. It brings lamp prices thirty-seven per cent below 1914 figures, and this reduction alone means a saving to the public of over \$7,000,000 annually.

Improvements in methods and in machinery for making lamps which have increased the output per operator and multiplied the capacity of the factories, have been principally responsible for these reductions in prices. The new cut reduces the prices of Mazda B lamps, 10 to 50 watts, which are in most general use, from 30 cents to 27 cents.

System Unification Announced By Puget Sound Utility

Unification of various important subsidiary interests with the parent organization is announced by President A. W. Leonard of the Puget Sound Power & Light Company, Seattle, Wash. The company now operates directly in its own name from the Canadian line through all the Puget Sound territory southward and across the Cascades into the Wenatchee Valley.

Three subsidiary companies, acquired in the last two years, passed out of existence as separate organizations under the new plan. These are the Washington Coast Utilities, operating electric light and other service in various cities of the state, including Wenatchee, Arlington, Stanwood, Edmonds, Elma, Montesano, etc.; the North Coast Power Company, operating various properties in the southern part of Washington, including Kelso, Chehalis, Vancouver, and in northern Oregon; and the Olympia Light & Power Company, operating light, power and street railway service in Olympia. Under the present arrangements, according to President

Leonard, the various cities heretofore served by these three companies will now be assigned to the six districts under which the Puget Sound Power & Light Company is now operating. Seattle is headquarters for the central district, the manager of which is D. C. Barnes. The northern district headquarters are in Bellingham, with Harry B. Sewall as manager; the northeastern district office is at Everett, with George Newell as manager. Tacoma is headquarters for the southwestern district, and R. P. Sullivan is manager. Portland becomes operating center of the southern district in charge of R. M. Boykin, formerly manager of the North Coast Power Company. Wenatchee is headquarters for the eastern district, with R. W. Muffley, formerly manager of the Washington Coast Utilities, in charge.

Further Skagit Development Will Be Indefinitely Delayed

Further development of the Skagit hydroelectric project, by the city of Seattle, Wash., including a projected \$5,000,000 masonry dam at Gorge Creek, will be delayed indefinitely, and the services of Carl F. Uhden, construction engineer since 1919, and his corps of engineers will be dispensed with when the present Gorge Creek unit under construction is in operation, as the result of a resolution adopted by a vote of 6 to 2, by the city council of Seattle recently. The action was taken in the face of a request from the Board of Public Works that action be delayed until the return of Mayor E. J. Brown who has been in Washington, D. C., and who opposes the cessation of work on the Skagit project.

The suspension of the work means the shelving, for an indefinite time, of plans for the proposed \$5,000,000 masonry dam at Gorge Creek, and storage development work on Ruby Creek. Members of the council, however, in discussing the resolution, made it plain that they were not voting to abandon further Skagit development, and would vote to resume operations when they considered the time ripe.

Councilmen state that the question of continuing the work was forced to an issue when Engineer Uhden asked for \$177,000 more for the Gorge Creek plant in addition to the \$11,000,000 bonds issued to do the work. Action was also taken, councilmen explained, in order that the engineers and other workmen employed at the Gorge Creek plant may have notice that their services will no longer be required.

The council also passed a resolution appropriating \$150,000 to complete the Gorge Creek plant, the money to be borrowed from the light fund. The council also passed a resolution increasing the salary of J. D. Ross, superintendent of the municipal lighting department, from \$6,000 to \$7,000 a year, effective immediately.

Annual Report of the Colorado Power Company Presented.—The annual report to the stockholders of the Colorado Power Company for the year 1923 has recently been published. The report contains the statement of Lyman P. Hammond, president of the company, and the treasurer's report for the year ending Dec. 31, 1923.

To Ascertain Bridge River Power Development Possibilities

The British Columbia Electric Railway Company has two survey parties, consisting of more than forty men, in the field, investigating the power possibilities of the Bridge River district. According to government reports, the Bridge River district possesses one of the largest latent power possibilities in British Columbia, estimates that have been made by engineers ranging from 200,000 to 400,000 hp. Bridge River flows into the Fraser River immediately north of Lillooet. The plan most favored by engineers is to build a dam some 25 miles from the mouth of the river, and by driving a tunnel through Mission Mountain to Seaton Lake a head of 1,000 ft. would be obtained at the shore of the lake.

A number of concerns have investigated this power site, among them being the Canadian Pacific Railway Company, which at one time contemplated the development of the power for the purpose of the electrification of its line through Fraser canyon, but the cost of construction appears to have deterred the development.

Superior Court Declares Aberdeen Bond Issue Is Invalid

Holding that the bond issue of \$2,000,000 voted last spring by the city of Aberdeen, Wash., for the construction of a new municipal power plant and for making improvements to the municipal water system was invalid, the city officials were permanently restrained from proceeding with the issuance of the bonds in an injunction handed down by Judge John M. Wilson in the superior court for Thurston County. The hearing was brought to Olympia on a change of venue from Grays Harbor County.

The bond election was ruled out on the ground that the proceeds of the sales were to be used for two projects which were not related, united or dependent upon each other. While the same impounding dam was to be used for both purposes, the projects were in all other respects separate, it was pointed out. Of the total issue, \$1,200,000 was to be used in constructing the power plant and the remainder for improving the city water system.

It is anticipated that the case will be appealed to the state supreme court by the city of Aberdeen.

Permit for Elwha River Project Granted.—A state permit has been granted to the Northwestern Power & Manufacturing Company of Port Angeles, Wash., to appropriate 1,300 sec.-ft. of water from the Elwha River in Clallam County, for utilization in a hydroelectric plant of 20,000 hp. The company is quoted as planning to start construction January, 1925.

Plan New Denver Lighting System.—Another new system of ornamental lighting is being planned in Denver, Colo., to connect the present system on Federal Boulevard with the main highway to Inspiration Point. An appropriation of \$20,000 has been set aside by the city council, according to David Reed, superintendent of the city's fire alarm and telegraph system, who is preparing the plans.

Canadian Pacific Railway May Be Electrified in Mountains

D. C. Coleman, vice-president of the Canadian Pacific Railway Company, recently made the following interesting announcement in Vancouver: "The company for some time has been preparing studies and surveys in connection with the proposed electrification of its railway line from Lake Louise to Revelstoke. A considerable force is now engaged in this work and, it is hoped, definite plans and recommendations can be placed before the executives of the company within a few months. It is, of course, a project of great magnitude, and will, therefore, in all probability require prolonged consideration."

The company had two survey parties in the field during the whole of last summer in the East Kootenay and they have been placed in the field again this summer, but, though the electrification of the mountain section was generally considered to be the object of these surveys, the foregoing is the first official announcement.

Denver Cooperative League Has Selected Advisory Board

Selection of Advisory Board members and the election of officers by the Electrical Cooperative League of Denver completes the organization of the electrical industry in that city for the ensuing year and marks the launching of the fourth campaign.

The only departure from the organization of the League in previous years was the election of three vice-chairmen instead of one. Under the new program all divisions of the League except that from which the chairman is elected, name vice-chairmen. By this arrangement, the chairman of a division automatically becomes vice-chairman of the League except in the case of the division which is represented in the chairmanship.

H. D. Randall of the General Electric Company has been made chairman of the League to succeed O. L. Mackell and the three vice-chairmen are R. G. Gentry, Public Service Company of Colorado, W. A. J. Guscott, Guscott Electric Company and president of the Denver Association of Contractor-Dealers, and A. E. Bacon, Mine & Smelter Supply Company.

E. A. Scott of the Scott Brothers Electric Company and Dean D. Clark, Mountain States Telephone & Telegraph Company, have been re-elected unanimously to serve the League as secretary and treasurer for the ensuing year.

The remaining members of the new Advisory Board consist of the following: J. P. Sprunt, Westinghouse Elec-

tric & Manufacturing Company; E. P. Kipp, Hazard Manufacturing Company and F. L. Easton, Economy Fuse & Manufacturing Company; J. C. Davidson, Hendrie & Bolthoff Manufacturing & Supply Company; R. W. Elliott, Elliott-Schmidt Electrical Supply Company; S. Rosenfield, Central Electric Supply Company; E. C. Headrick, Headrick Electric & Machine Company; D. D. Sturgeon, Sturgeon Electric Company; Clarence Keeler, O. L. Mackell and F. F. McCammon of the Public Service Company of Colorado.

The first meeting of the new Advisory Board for the new fiscal year took place Wednesday, July 2.

Customer Ownership Securities Campaign Is Completed

The second customer ownership stock selling campaign has just been completed by the Public Service Company of Colorado and reports from Clare N. Stannard, vice-president and general manager of the company, indicate that its success was even greater than had been anticipated by officials of the Doherty company.

In the ten days allotted to employees for the campaign 10,481 shares were sold with a total of 3,165 individual sales. Over 2,000 new names were added to security holders' lists while 52,496 calls were made in the interest of the campaign.

The division led by V. L. Board, general superintendent of the company, led the field in sales while high individual records were made by Bert Thompson of the Denver, Colo., office and Miss Dorothy Palmer of Cheyenne, Wyo. Under Mr. Stannard, Guy W. Faller, assistant vice-president, directed the campaign.

The stock issue was 7 per cent par preferred, sold on partial payments with no limit as to the number of shares purchased. National banks throughout the region served by the company aided in the campaign. Funds derived from the stock sold will be applied on the absorption of the controlling interest in the Colorado Power Company by the Cities Service Company.

To Build Substation at Vancouver, Wash.—The Northwestern Electric Company is to install at Vancouver, Wash., a large full-automatic substation, the equipment and installation costing \$85,000. This equipment is a 10,000-kw. synchronous condenser which will handle automatically all activities of the substation. It is almost human in its action, as it regulates voltage and shuts down, and reconnects service when necessary.

President of N.E.L.A. Announces Organization Personnel

Franklin T. Griffith, president of the National Electric Light Association, has announced the following organization personnel for the next administrative year: Public relations section—M. S. Sloan, Brooklyn Edison Company, Brooklyn, N. Y., chairman; H. C. Abell, Electric Bond & Share Company, New York City, E. A. Barrows, Narragansett Electric Lighting Company, Providence, R. I., W. H. McGrath, Puget Sound Power & Light Company, Seattle, Wash., vice-chairmen. Accounting section—W. Paxton Little, Niagara Falls Power Company, Niagara Falls, N. Y., chairman; W. C. Lang, Electric Bond & Share Company, New York City, A. R. Patterson, Stone & Webster, Boston, Mass., vice-chairmen. Commercial section—W. R. Putnam, Idaho Power Company, Boise, Idaho, chairman; F. D. Pembleton, Public Service Electric Company, Newark, N. J., George H. Jones, Public Service Company of Northern Illinois, Chicago, Ill., vice-chairmen. Technical section—H. P. Liversidge, Philadelphia Electric Company, Philadelphia, Pa., chairman; C. F. Hirshfeld, Detroit Edison Company, Detroit, Mich., L. M. Klauber, Consolidated Gas & Electric Company, San Diego, Calif., W. K. Vanderpoel, Public Service Electric Company, Newark, N. J., vice-chairmen. Special national committees: constitution and by-laws—W. C. L. Eglin, Philadelphia Electric Company, Philadelphia, Pa.; electrical resources of the nation—C. E. Groesbeck, Electric Bond & Share Company, New York City; prize awards—T. I. Jones, Brooklyn Edison Company, Brooklyn, N. Y.; electrification of steam railroads—F. R. Coates, Toledo Edison Company, Toledo, Ohio; finance—J. B. McCall, Philadelphia Electric Company, Philadelphia, Pa.; lamps—F. W. Smith, United Electric Light & Power Company, New York City; public policy—S. J. Insull, Middle West Utilities Company, Chicago, Ill.; rate research—Alex Dow, Detroit Edison Company, Detroit, Mich.; water power development—W. E. Creed, Pacific Gas and Electric Company, San Francisco, Calif.; educational—F. R. Jenkins, Commonwealth Edison Company, Chicago, Ill.; insurance—Charles B. Scott, Bureau of Safety, Chicago, Ill.; membership—Howard K. Mohr, Philadelphia Electric Company, Philadelphia, Pa.; rural service—G. C. Neff, Wisconsin Power, Light & Heat Company, Madison, Wis.; wiring—R. S. Hale, Edison Electric Illuminating Company, Boston, Mass.



Delegates and guests in attendance at the annual convention of the Wyoming Public Utilities Association held at Casper, Wyo., June 23-24, 1924.

Regional Directors Will Handle Lighting Campaign

Definite plans for completely covering the country in the Better Home Lighting activity were recently made at a meeting of the executive committee of The Society for Electrical Development, Inc. Regional directors have been appointed to carry out the campaign in the United States and Canada. In each geographic section of the National Electric Light Association, representatives have been selected who will spend a great portion of their time from now until the campaign closes in visiting communities in their section for the purpose of explaining the activity. Western appointees are as follows: Clare E. Stannard, Public Service Company of Colorado, Denver, Colo.; A. C. McMicken, Portland Electric Power Company, Portland, Ore.; and A. Emory Wishon, San Joaquin Light & Power Corporation, Fresno, Calif.

The field work of the campaign will be conducted under the direction of these men and all reports will be made to them as regional directors.

P.C.E.A Section Committee Chairmen Are Appointed

Frank A. Leach, Jr., president of the Pacific Coast Electrical Association, has announced the appointment of the various section chairmen for the year 1924-25. These chairmen will complete their respective committee personnel at an early date in order that the important work of the year may get under way promptly. The appointments as contained in Mr. Leach's announcement are as follows:

Technical section—P. O. Crawford, vice-president and chief engineer, The California Oregon Power Company, Medford, Ore.
Commercial section—A. M. Frost, commercial manager, San Joaquin Light & Power Corporation, Fresno
Public Relations section—R. E. Fisher, vice-president in charge of public relations and sales, Pacific Gas and Electric Company, San Francisco
Public Policy section—R. H. Ballard, vice-president and general manager, Southern California Edison Company, Los Angeles
Publicity section—A. C. Joy, manager, publicity department, San Joaquin Light & Power Corporation, Fresno
Accounting section—E. W. Hodges, auditor, Pacific Gas and Electric Company, San Francisco
Insurance section—R. J. Cantrell, property custodian, Pacific Gas and Electric Company, San Francisco
Personnel section—S. C. Haver, personnel manager, Southern California Edison Company, Los Angeles
Purchasing and Stores section—H. O. McKee, Southern California Edison Company, Los Angeles
Membership section—S. H. Taylor, secretary, Pacific Coast Electrical Association, San Francisco

Manuals on Electric Ranges Published.—The Society for Electrical Development, Inc., New York City, has issued four manuals on electric ranges and the development of electric range business. The first manual, Sales Management, has to do with the organization of sales campaigns, selection of salesmen, demonstrations, etc. The second volume deals with advertising and other volumes treat of retail sales and demonstrations and servicing. The entire set comprises a comprehensive arrangement of the information necessary for the pursuit of electric range business and permits of the formation of orderly plans for sales campaigns on this line of equipment.

Dredge Equipment Contract Is Let.—The Port of Portland, Ore., recently awarded a contract to the Westinghouse Electric & Manufacturing Company for furnishing and installing the electrical equipment for the new 30-in. Diesel electric dredge "Clackamas" and for an electric pipeline booster pump. The total amount of the bid was \$147,500. The hull of the dredge, which is of steel, is now under construction. A very large saving in operating costs over the cost of operating the steam-driven dredges is expected.

Electricity Races Steam in Oil Well Drilling

Working with a crew inexperienced with electric drive and finishing work at the same time as a nearby steam-drilled well, operators in the California oil fields recently demonstrated the greater economy in the use of electricity in oil well drilling.

The San Martinez Oil Company started drilling a well in the Signal Hill field, Long Beach, Calif., at the same time that work commenced on a nearby well of another company. The San Martinez company used electric power on a rotary drilling rig, while the neighboring company used steam power. Starting work on the same day, the two crews had a race with each other.

In spite of lost time at the start, due to an inexperienced crew, the electrically drilled well was finally completed and the casing set at the top of the sand on the same day, 38 days after starting, as was the steam-drilled well; both wells were cemented at the same time, and both reached production on almost exactly the same date. During the entire performance at the electrically drilled well, not a single accident of consequence occurred, whereas there were a number of twist-offs and expensive accidents at the steam-driven well.

The electrical equipment consisted of a 75-hp. motor on the draw-works and rotary table, a 50-hp. motor on the slush pumps and a small motor on the blower, as well as electric lights, all furnished by the General Electric Company. The power cost on the San Martinez well was \$601 for 38 days, or an average of \$15.81 per day. The power cost on the steam-drilled well was about \$100 per day.

The cost of installation of the equipment for the two wells was practically the same. The salvage value of the San Martinez electric power equipment is estimated at about 90 per cent of full value, whereas it is considerably less than this on the steam equipment.

Purdue University Publishes Bulletin on Meters.—The Engineering Extension Service of Purdue University has recently published a bulletin entitled "Watt-hour Meter Accuracy on Light, Low Power Factor Loads." The information was secured and compiled by D. D. Ewing and D. T. Canfield.

Annual Report of The California Oregon Power Company Is Published.—The California Oregon Power Company with head offices in Medford, Ore., has recently published its 1923 annual report. A twenty-four page booklet contains the report which covers most accurately the activities of the company during the past year.

Possibilities of Arkansas River Are Subject of Report

Nineteen power projects are possible on Arkansas River in Colorado, according to a report prepared by an engineer of the Department of the Interior, Geological Survey. These projects will represent a total potential power of 44,000 hp. for 50 per cent of the time and 24,000 hp. for 90 per cent of the time.

The use of the water for power, however, is secondary to its use for irrigation. The total adjudicated and decreed water rights in three irrigation districts below Canon City amount to six times the mean annual flow at Canon City, but as the storage reservoirs for irrigation are in the lower part of the river, the natural flow in the upper part is available for the generation of electric power. The cost of developing power will be relatively high because of the low heads and the small flow and because the flow can not be regulated for the generation of power owing to the requirements for irrigation.

Six reservoir sites were found, but owing to the high cost of construction only two are considered feasible at present. One of these sites is on the East Fork of the Arkansas River near Leadville, where a dam 100 ft. high would create a reservoir having a capacity of 10,000 acre-ft.; the other site is at Twin Lakes, where a 75-ft. dam would create a reservoir having a capacity of 130,000 acre-ft. The Twin Lakes reservoir could supply water for both power and irrigation.

Between Leadville and Buena Vista there are three good power sites the development of which would require three low diversion dams and 12 miles of conduit, having a capacity of 300 sec.-ft. The development of these sites would make available 9,200 hp. for 50 per cent of the time and 3,800 hp. for 90 per cent of the time. Between Buena Vista and Salida there are four power sites. A dam is already built at one of these sites and a low diversion dam at each of the others and 18 miles of conduit of 350 sec.-ft. capacity would make available a total of 14,800 hp. for 50 per cent of the time and 8,500 hp. for 90 per cent of the time. Between Salida and Pleasanton there are three power sites, where three low diversion dams and 13 miles of conduit of 425 sec.-ft. capacity would make available 7,900 hp. for 50 per cent of the time and 4,900 hp. for 90 per cent of the time. Between Pleasanton and Canon City there are four power sites where four low diversion dams and 9 miles of conduit of 450 sec.-ft. capacity would make available 7,800 hp. for 50 per cent of the time and 5,400 hp. for 90 per cent of the time.

Citizens of Helper, Utah, Vote to Sell Municipal Plant.—At a recent special election the citizens of Helper, Utah, voted to sell the city's municipal electric plant. Operation of this plant was discontinued in September, 1917, since which time the municipality has been purchasing energy from the Utah Power & Light Company and has been distributing the energy to approximately 400 customers. The decision to sell the plant came as a result of this experiment demonstrating the greater economy and reliability of central station service.

Meetings

Many San Diego Merchants See Window Lighting Display

Trying a little intensive merchandising effort on its own account, the San Diego Electric Club packed the house with merchants at its June 24 meeting to show them the possibilities of color in window lighting. A letter inviting the merchants of the city individually to either come themselves or to send representatives was mailed to a large mailing list. To follow up the letter, members of the Electric Club, each allotted a certain block to cover, made personal visits on the merchants to explain further the purpose of the window lighting display and to urge upon them the value to them of seeing it.

Frank N. Smith, field representative of the California Cooperative Campaign, was introduced by A. E. Holloway, after President Dellmann had opened the meeting with the "smile" gavel awarded the club at the P.C.E.A. convention at Coronado.

"The merchant today is under keener competition than ever before," said Mr. Holloway. "He has a valuable asset in his show window. He can make his windows more effective, can make them sell more goods, and increase their value to him. The electrical industry wants to show you some of the utensils it can supply you to accomplish these results."

Glenwood Springs Convention Chairmen Appointed

For the first time in the history of utility circles in the mountain region, a woman has been designated as an official member of a convention entertainment committee. She is Mrs. John J. Cooper, wife of the general manager of the Mountain Electric Company, Denver, Colo. She will serve with her husband who is chairman of the committee for the coming combined convention of the Rocky Mountain division of the National Electric Light Association and Colorado Public Service Association at Glenwood Springs, Colo., Sept. 15-17.

Other appointments made by E. A. Phinney, general convention chairman, recently selected for this position by the executives of both organization, are:

Publicity and Invitation Committee—F. F. McCammon, Public Service Company of Colorado, chairman; S. W. Bishop, Electrical Cooperative League of Denver, and George E. Lewis, Rocky Mountain Committee on Public Utility Information.

Program Committee—J. F. Greenawalt, Mountain States Telephone & Telegraph Company, chairman; L. M. Cargo, Westinghouse Electric & Manufacturing Company, H. D. Randall, General Electric Company, and A. C. Cornell, Western Electric Company.

Transportation Committee—C. C. Johnson, Mountain States Telephone & Telegraph Company, chairman; J. C. Davidson, Hendrie & Boethoff Manufacturing & Supply Company, and E. A. West, Denver Tramway Company.

Other members of the entertainment committee are J. E. Moorhead, Mountain States Telephone & Telegraph Company, H. P. Tewksbury, Public Service Company of Colorado, and B. C. J. Wheatlake, General Electric Company.

O. A. Weller, budget director of the Public Service Company of Colorado and secretary of the Rocky Mountain division, will serve as vice-chairman and secretary of the general convention committee headed by Mr. Phinney.

New Wrinkle in Entertainment at Gearhart Convention

An unique feature of the entertainment provided at the convention of the Northwest Electric Light and Power Association at Gearhart, Ore., June 25 to 27, 1924, was the clam bake on the beach the night of June 27. A huge bonfire near the water's edge, supplemented by flood lights mounted on the bank above, furnished illumination for the improvised kitchen and dining tables, and for the song and dance acts

COMING EVENTS

Rocky Mountain Division, N.E.L.A.—

Annual Convention—Glenwood Springs, Colo.
Sept. 15-17, 1924

Colorado Public Service Association—

Annual Convention—Glenwood Springs, Colo.
Sept. 15-17, 1924

California State Association of Electrical Contractors and Dealers—

Annual Convention—Santa Cruz, Calif.
Sept. 19-21, 1924

Association of Electragists, International—

Annual Convention—West Baden Springs, Ind.
Sept. 29-Oct. 4, 1924

which consisted of an Hawaiian orchestra and hula hula dancer, and native songs and dances by Indians from the Umatilla Reservation.

The annual golf tournament, in which 80 entrants competed for the Kilowatt Cup, was won by S. J. Halls, B. C. Electric Railway Company, Victoria, B. C., while Mrs. C. N. Sampson, Portland, Ore., won the honors in the ladies' event.

Other features provided by the entertainment committee, which was headed by V. H. Moon, Pacific Power & Light Company, Portland, Ore., consisted of automobile trips to nearby points of interest, and nightly dinner dances interspersed with cabaret acts by professional singers and dancers.

Mrs. Lewis A. McArthur, Portland, Ore., was chairman of the ladies' entertainment committee, which arranged for several events especially for the ladies attending the convention.

Public Utility Booklet Published by Bond House.—To give a comprehensive idea of the value of public utility securities, The National City Company of New York, N. Y., has recently published an attractive booklet entitled "Mighty Servants of Civilization." The booklet is most attractively illustrated and contains descriptions of some of the larger public utility companies operating in the United States. Among the Western projects to be included in the booklet are: Pit. No. 1 plant of the Pacific Gas and Electric Company; the River Mill power plant and the Oak Grove project of the Portland Electric Power Company.

Rocky Mountain Division N.E.L.A. Chairmen Are Appointed

Organization of the Rocky Mountain division of the National Electric Light Association for the new year starting July 1 with Norman Read, general manager of the Colorado Power Company, as president, is progressing according to recent announcements in Denver, Colo. Following an organization meeting in that city recently at which officials of the Colorado Public Service Association were present, appointments of the following section and committee chairmen have been made:

Accounting Section—J. E. Loiseau, secretary, Public Service Company of Colorado, Denver
Commercial Section—R. G. Munroe, assistant commercial manager, Public Service Company of Colorado, Denver

Public Relations Section—W. C. Sterne, manager, Summit County Power Company, Denver

Technical Section—E. F. Stone, superintendent, Southern Colorado Power Company, Pueblo

Accident Prevention—F. A. Tewksbury, Public Service Company of Colorado, Denver

Rural Lines—Carl A. Luscombe, superintendent western division, Public Service Company of Colorado, Boulder

Membership—George E. Lewis, manager, Rocky Mountain Utility Information Committee, Denver

Wiring—S. W. Bishop, executive manager, Electrical Cooperative League, Denver.

Officers Elected By Engineering Educational Society

A. Potter, dean of the engineering school of Purdue University, was elected president of the Society for the Promotion of Engineering Education at the close of its recent annual convention held at the University of Colorado, Boulder, Colo.

Other officers elected were R. S. King, professor at Georgia School of Technology, and G. B. Ingraham of the engineering faculty of Columbia University, vice-presidents; F. L. Bishop, dean of the University of Pittsburgh, secretary; and W. O. Wiley, New York publisher, treasurer.

The Public Service Company of Colorado entertained the 200 convention attendants at its new Valmont plant now being constructed near Boulder, on the last day of the convention.

Anacortes Grants Utility Franchise.—By a unanimous vote of the city council of Anacortes, Wash., a 50-year franchise for light and power has been granted to the Puget Sound Power & Light Company. The franchise was passed over a petition from property owners in the city for delay in the passage, and the employing of an expert to investigate tariffs and terms. The council held the matter had been before the public for two months, and that the employment of an expert would involve needless expense and serve no good purpose.

Puget Sound Rebuilds Lines.—The Puget Sound Power & Light Company has increased the voltage of its transmission lines in Lewis County district from 22,500 to 45,000 volts. In order to carry the higher voltage, new substations have been built at Tenino, Napa-vine, Winlock, Vader and Kelso, and a line has been built connecting the system in the Centralia territory with that on Puget Sound. A bank of transformers, 1,500 kw. in capacity, has been installed at Tenino, together with lightning arresters.

Manufacturer, Dealer and Jobber Activities

The General Electric Company has brought out what is said to be the only self-contained, adjustable speed, alternating current motor with shunt characteristics on the market. This motor, known as type BTA, has been designed to cover the wide field of applications requiring such characteristics, an inherent feature being that its change of speed is only moderate as compared to the change of load.

The Jones-Thorn & Company, Inc., who for the past three years have maintained offices in connection with their warehouse at 747 Warehouse Street, Los Angeles, Calif., are now moving into their new offices in Rooms 1319-20-21 and 22 A. G. Bartlett Building. The original warehouse at 747 Warehouse Street will be retained for storage. Jones-Thorn & Company, Inc., are distributors of power plant supplies and equipment and represent California Wire Company, Cadman Valve Company, Fort Pitt Spring Manufacturing Company and several other manufacturers.

A. Shelburne, formerly of 727 Brent Avenue, South Pasadena, Calif., has moved to a new factory at 639 Central Avenue, Los Angeles. He has been manufacturing portable air brushes for many years and is now turning out a greatly improved brush for fixture work.

The Pasadena Electric Shop, Pasadena, Calif., has moved from its former quarters at 285 North Lake Street to a new and larger store at 905 East Colorado Street. A considerably larger stock will be carried at the new location and it is the intention to increase the investment in glass, fixtures and fixture parts.

Guilbert Brothers, electrical dealers of San Jose, Calif., have just completed alterations and enlargement of their store. The rooms have been increased and the display arrangements have been improved and a completely equipped workshop has been installed.

The Lighting Studios, Inc., have been opened at San Jose, Calif., by Frank J. Callahan and Leslie King. A full line of lighting fixtures, electric appliances and art goods will be carried. The firm will specialize on exclusive and distinctive fixtures and will include the line of Otter the lamp maker of Santa Cruz.

Curtis Lighting, Inc., Chicago, Ill., has issued several new bulletins on color lighting, floodlighting and luminous bowl units.

The Chidsey Company, New York City, has brought out a new type flash-light which operates without battery.

The Elwell-Parker Electric Company, Cleveland, Ohio, has developed a new type of electric industrial tractor for handling coils, bales, boxes, etc., in and around industrial plants.

The American Blower Company, Detroit, Mich., has issued a catalog descriptive of electrically operated blower fans for ventilation. The book contains interesting illustrations of existing installations and also information for the placement of ventilating equipment.

W. N. Matthews Corporation, St. Louis, Mo., has issued new price lists on its products. It has also issued its catalog No. 500 descriptive of Fuswitches.

The Majestic Electric Appliance Company, San Francisco, Calif., has announced the appointment of E. N. Brown as general manager. Mr. Brown is well known in the manufacturing



E. N. Brown, recently elected general manager, Majestic Electric Appliance Company, San Francisco, Calif.

branch of the industry. Having established its Majestic heaters in the national market, the company is now starting a selling campaign for its newest product, a combined waffle and pancake iron. The round aluminum plates of this iron are reversible, one side being for waffles and the other for pancakes. Harry H. ("Pete") Daley is sales manager for the company.

The Southern Electrical Company, San Diego, Calif., has opened a branch store at the town of Ramona, about forty miles from San Diego, in anticipation of the extension of power service to that community.

Altorfer Bros. Company, Peoria, Ill., has announced the introduction of a new electric vacuum washer. The machine embraces several new features and is of the vacuum cup type.

The Electric Controller & Manufacturing Company, Cleveland, Ohio, has started publication of a news sheet entitled "Current News." This sheet is to be issued regularly and will contain items of interest to users of electricity.

Maydwell & Hartzell, Inc., San Francisco, Calif., have moved their Los Angeles office from the Metropolitan Building to the Transportation Building in that city. E. S. Condon will remain in charge as manager.

The Russell Electric Company, Chicago, Ill., has brought out a new marcel waving iron. The device is said to embrace several novel features.

Crouse-Hinds Company, Syracuse, N. Y., has just issued a new circular on interlocking safety switches and plugs.

The Edison Lamp Works of General Electric Company, Harrison, N. J., has recently published a lighting data bulletin—No. L. D. 151—on lighting for hotels and restaurants.

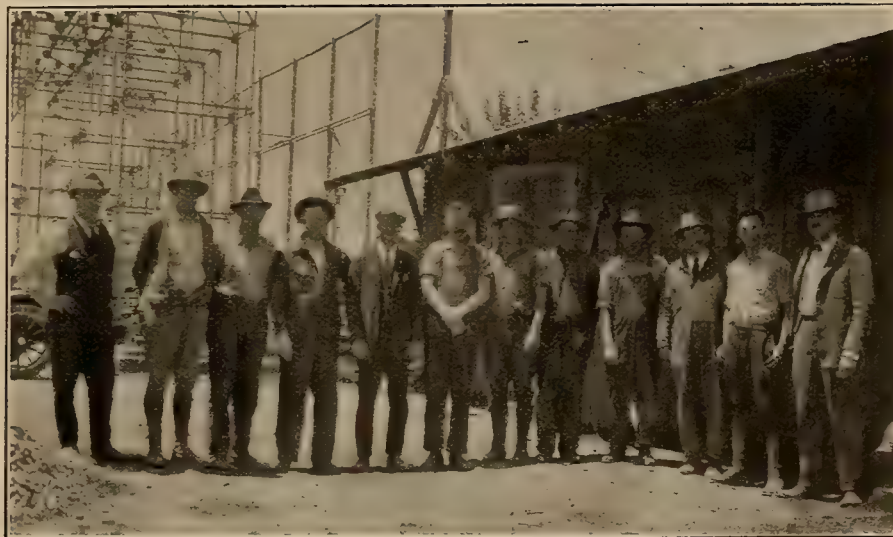
The Condit Electrical Manufacturing Company, South Boston, Mass., has recently published three bulletins on oil switches, circuit breakers and electrically operated mechanism for automatic closing and reclosing of automatic oil switches and circuit breakers by either direct or alternating current.

Bridgeport Brass Company, Bridgeport, Conn., has recently issued a booklet descriptive of condenser tubes.

The General Electric Company has just issued a new booklet entitled "The G-E Farm Book." This is an interesting presentation of the use of electricity on the farm. The book is copiously illustrated and shows many applications of electric devices to farm labor as well as the electrification of farm houses, barns, dairies and other buildings.

The Nizer Corporation, Detroit, Mich., has brought out a new type of automatic electric ice cream cabinet. A catalog has been issued descriptive of the device and its application.

The Century Electric Company, St. Louis, Mo., has issued a leaflet descriptive of its repulsion start, induction single-phase motors in sizes from $\frac{1}{8}$ to 40 hp.



These are the men who were in charge of the record-breaking installation of the 12,500-kw. steam plant for the Pacific Gas and Electric Company at Sacramento, Calif. (Left to right) C. G. Pelley, job superintendent; W. E. Storm, carpenter foreman; J. P. Schell, rigger foreman; D. T. Rutledge, General Electric Company erecting engineer; H. H. Mitchell, Wheeler Company erecting engineer; George Barr, General Electric Company erecting engineer; C. C. Lambert, civil engineer; William Hanrahan, C. C. Moore Company boiler foreman; William Johns, master mechanic; E. F. Fitzgerald, general foreman; F. J. Morris, material man; A. J. Swank, construction superintendent.

Personals

Richard M. Boykin, manager southern division, Puget Sound Power & Light Company with headquarters in Portland, Ore., was elected to the presi-



RICHARD M. BOYKIN

dency of the Northwest Electric Light and Power Association at its recent annual convention. He has for a number of years taken a prominent part in electrical affairs in the Northwest, and his wide acquaintance and broad experience make him particularly well fitted for the position. After receiving his degree in electrical engineering in 1897 from the school now known as the Alabama Polytechnic Institute, Mr. Boykin immediately started work in electrical construction, including motor installations in cotton mills in South Carolina. Several years were spent as shop foreman of the American Pressed Steel Pulley Company at Philadelphia, Pa. He also spent some time in Nevada in connection with power distribution in and about the great metal mines. The year 1911 found Mr. Boykin in Oregon as owner and operator of the electrical system at Hillsboro. This system he developed, and when it was merged with the Washington-Oregon Corporation he became superintendent of construction. In 1914 when a receiver was named, he was appointed engineer, and upon the reorganization of the company as the North Coast Power Company was made vice-president and general manager. When that company was absorbed by the Puget Sound Power & Light Company he was named manager of the southern district. In the local section of the A.I.E.E. Mr. Boykin has served with credit in many capacities and has also been active in committee work in the Northwest geographic division of the N.E.L.A., including the chairmanship of the overhead systems committee and technical section.

Robert W. Clark, **M. T. Crawford**, **George E. Quinan** and **J. C. Lindsey** represented the Seattle office of the Puget Sound Power & Light Company at the recent annual convention of the Northwest Electric Light and Power Association at Gearhart, Ore.

Arthur Williams, New York Edison Company, New York City, has been appointed a member of the Lighting Educational Committee. Mr. Williams will also serve as regional director for the eastern New York district.

Douglas V. Thomas, of the El Paso Electric Railway Company, El Paso, Tex., has been appointed assistant to the superintendent of railways.

E. J. DesCamp and **H. J. Billica** were the representatives of the Western Electric Company's Seattle office at the annual convention of the Northwest Electric Light & Power Company held recently at Gearhart, Ore.

E. J. Rosenauer, formerly general auditor of the Southern Colorado Power Company of Pueblo, Colo., but for the past year with the Wisconsin-Minnesota Power Company, has been transferred to the Pacific Coast with headquarters in Stockton, Calif., where he will be general auditor of the H. M. Byllesby properties on the Coast. They include the San Diego Gas & Electric Company, the Western States Power Company, the Mountain States Power Company and the Tacoma Gas Company.

W. F. Grimes has recently joined the Los Angeles, Calif., office of the Westinghouse Electric & Manufacturing Company in the meter engineering department of the central station division. Prior to Mr. Grimes' present connection he was in the Bureau of Engineering of the United States Navy Department in Washington, D. C., where he spent seven years.

J. H. Cox and **J. F. Peters** of the general engineering department of the Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., were in Los Angeles, Calif., for a few weeks conducting some special engineering investigation for the local office. **ing, Seattle, Wash.**, appeared before the Senate Committee on Agriculture in Washington, D. C., in connection with power rates and power development costs, relative to the Muscle Shoals project under consideration. Mr. Ross was summoned by federal officials to appear before the committee where he explained the workings of the Seattle municipal lighting plant. Discussing the Skagit River project under development by the city, Mr. Ross stated that the Skagit offered power possibilities rivaling Muscle Shoals, and estimated the possible development of the river at 300,000 hp.

Frank N. Cooley, for the past ten years associated with the Seattle, Wash., branch of the Western Electric Company, as sales manager, has been transferred to the Duluth, Minn., office of the company, where he will become manager. Mr. Cooley will be succeeded in Seattle by **J. H. Kelly**, formerly sales manager of the Tacoma branch of the Western Electric Company, where he has been located for five years. The Tacoma office will be filled by **V. E. McCain**, supply and house goods specialist of the Western Electric Company in Seattle.

W. S. Moody, engineer in charge of the transformer engineering department of the General Electric Company, Schenectady, N. Y., was a recent Los Angeles, Calif., visitor.

A. S. Huey, vice-president in charge of operation and management of H. M. Byllesby & Company, Chicago, Ill., has been elected chairman of the board of directors of that organization.

C. W. Fair, of the El Paso Electric Railway Company, El Paso, Tex., has been appointed accountant of the Mesilla Valley Electric Company, Las Cruces, N. M.

Marvin Chase, state supervisor of hydraulics of the State of Washington, recently made an inspection trip of the Baker River power project proposed by the Puget Sound Power & Light Company, involving the development of 65,000 hp. Mr. Chase also inspected the Skagit power plant under development by the city of Seattle.

A. C. Gribble, vice-president of the Electrical Specialty Company of San Francisco, Calif., is making a tour of California that will cover between three and four weeks.

Harry D. Randall, Rocky Mountain district manager of the General Electric Company, with headquarters in Denver, Colo., and widely known in the electrical industry, has been elected chairman of the Electrical Cooperative League of Denver, effective July 1. He succeeds **O. L. Mackell**, retiring chairman. Mr. Randall has served as a member of the directing board of the Denver League for a number of years and for the last year has been chairman of the electrical manufacturers' division of the organization. He moved to Denver four years ago from Salt Lake City, Utah, where he was local manager of the General Electric organization and where he still holds the office of chairman of the board of directors of the Capitol Electric Company. Also, he is chairman of the Butte Electric Supply Company at Butte, Mont. He has been actively identified with hydroelectric development in the West and took a prominent part in the earlier railroad electrification on the Pacific Coast before locating in Salt Lake City. A graduate of Amherst College, he is a member of several technical organizations including the American Institute of Electrical Engineers, American Insti-



HARRY D. RANDALL

tute of Mining and Metallurgical Engineers, American Electro-Chemical Society and the National Electric Light Association, in addition to the Rocky Mountain Committee on Public Utility Information. He belongs to many prominent clubs, including the Denver Rotary Club, Denver Club, Denver Athletic Club and the Lakewood Country Club, in addition to the University Club, Alta Club and Country Club of Salt Lake City.

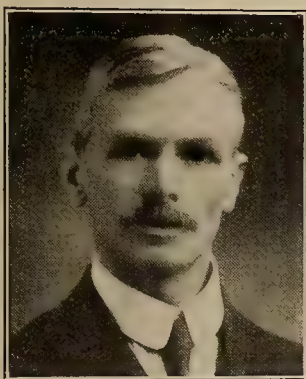
Carl F. Kirchhaine, for thirteen years assistant treasurer of the Pacific Northwest Traction Company and allied interests in Everett, Wash., has been promoted to the general accountancy staff of the Stone & Webster interests in Seattle. Mr. Kirchhaine will be succeeded by **T. P. Donegan**, a member of the treasurer's staff at Tacoma.

Clarence T. Hesselmeyer of San Francisco, Calif., is one of the eight graduate students of American colleges awarded 1924 scholarships under the Charles A. Coffin Foundation established two years ago by the General Electric Company, Schenectady, N. Y. Mr. Hesselmeyer is now studying at Stanford University, from which he graduated this year with a degree in mechanical engineering. His scholarship research work will deal with high voltage phenomena and electro-chemistry.

Herman Lemp, engineer in charge of the internal combustion engine engineering department of the General Electric Company, Erie, Pa., has resigned his connection with that concern to join the Erie Steam Shovel Company. This follows an association with the General Electric Company covering 42 years.

Ward Harrison, illumination engineer of the National Lamp Works and former president of the Illuminating Engineering Society, was the guest of honor and principal speaker at a meeting of the Electrical Cooperative League in Denver, Colo., July 2. The occasion marked the first noonday meeting of that organization in its new fiscal year and a record attendance was established. Mr. Harrison illustrated his talk on better illumination with special demonstrating equipment.

William Saville, general secretary of British Columbia Electric Railway Company, Ltd., Vancouver, B. C., has been elected president of the Vancouver Electric Club. He has always taken an active interest in the organization and



WILLIAM SAVILLE

has held a number of different offices in it. He is well known in the industry, having been associated with the British Columbia Electric Railway Company since 1911. He has been identified with transportation systems throughout his career in various accounting and secretarial capacities. Prior to his coming to Vancouver, Mr. Saville was with the Underground Electric Railways, London, and the Aire & Calder Navigation Company, Leeds, England.

R. B. Clapp of Clapp & LaMoree, Los Angeles, Calif., is spending some time in San Francisco relieving S. E. Dunn, manager of the San Francisco branch, who is making a trip through the Northwest.

William P. Bear, of New York City, is in San Francisco, Calif., for the purpose of cooperating with the Pacific Radio Trade Association in the conduct of the Pacific Radio Exposition.

Herbert C. Moss, well known in the electrical construction field in Seattle, has opened an office at 402 Mehlhorn Building and will engage in electrical construction work. Mr. Moss came to Seattle in 1888, where he engaged in electrical contracting under the name of the Standard Electrical Company. Three years ago he went to Los Angeles and continued the same work, associated with the Newbery Electric Corporation.

W. M. Bosworth has been appointed city engineer of Tacoma, Wash., to replace C. E. Putnam, resigned.

Bernhard Olsen has succeeded S. E. Gates as manager of Spokane, Wash., branch, General Electric Company. On May 1 Mr. Gates became manager of the Los Angeles, Calif., branch of the company. Mr. Olsen was born in Portland, Ore., in 1889. He graduated in electrical engineering from the University of Oregon in the class of 1911 and forthwith entered the Portland office of General Electric Company in the engineering department. In 1912 he entered the sales department and in the fall of the same year he was transferred to the Spokane office. Since then he has given his attention principally to the mining and industrial fields, handling sales of motors and power plant equipment. Mr. Olsen is a member of the Masons, Kappa Sigma, University Club, Spokane Transportation Club and the Chamber of Commerce.

Roy Skill, formerly district manager at Pomeroy, Wash., for the Pacific Power & Light Company, Portland, Ore., and prior to that time line foreman at Dayton, Wash., has been promoted to be district manager at Dayton.

F. N. Averill, of Fobes Supply Company, Portland, Ore., was a recent visitor to San Francisco, Calif.

J. H. Garvin, of the Kellogg Switchboard & Supply Company, Chicago, Ill., is in San Francisco, Calif., on business for his company.

converters to utilize alternating current, after the alternating current system had been perfected by George Westinghouse, with whom Mr. Lamme was closely associated until the former's death. Mr. Lamme was born near Springfield, Ohio, 1864. He graduated in mechanical engineering in 1888 from the Ohio State University and entered the employ of the Westinghouse com-



B. G. LAMME

pany in 1889. During his service with that company he designed the electrical equipment for the first power houses operated by power from Niagara Falls. He also designed the generators for the World's Fair at Chicago; the generating and motor equipment for the first great railroad electrification on the New York & Hartford lines; the most successful synchronous converter ever built; and the single reduction gear street car motor which, though developed in 1890, is still used almost universally. This device alone is estimated to have saved traction companies possibly \$500,000,000 in the thirty years in which it has been in use. Mr. Lamme was one of the two members from the American Institute of Electrical Engineers elected to serve on the Naval Consulting Board during the war and was chairman of the inventions committee of that body. In 1919 he was awarded the Edison Medal by the American Institute of Electrical Engineers for his engineering achievements. In recognition of the value of his work to the world the Ohio State University awarded him the Joseph Sullivant Medal.

Grayson B. McNair, formerly prominent in university engineering circles and more recently identified with several national manufacturers in the mountain region, died June 30 in Denver, Colo., after a long period of ill health. Mr. McNair was a native of Indiana and a graduate of Purdue University. Later he became assistant professor of electrical engineering at Kansas State College. In 1917 he was appointed head of the electrical engineering department at Colorado College which institution he left to become a lighting specialist for the Western Electric Company. He later joined the ranks of the Westinghouse Electric & Manufacturing Company in a similar capacity and resigned about six months ago to become associated with Paul Douden in the Globe Electric Supply Company of Denver.

Obituary

William T. Ruete, inventor and authority on interior conduit, died June 7 in New York City. At the time of his death he was consulting engineer of the conduit and wire division of the General Electric Company.

B. G. Lamme, chief engineer of the Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., and considered one of the world's foremost authorities on electrical engineering, died at his home in Pittsburgh, Pa., July 8. Every branch of electrical science was benefitted by his work, but his most outstanding contribution to its progress probably was the perfection of railway and industrial motors and

Trade Outlook

San Francisco

The feeling generally prevalent here is that there is a material improvement in the business and industrial outlook. The quarantine made necessary by the hoof and mouth disease has been lifted throughout San Francisco County, and this has added an optimistic note.

Conditions in the hardware trade show improvement. Wholesale trade, in general, is fair; buying is reported as conservative. Sales of large jobbers in the dry goods line compare favorably in volume with those of last year, although more sales effort seems to be required, as buyers show an inclination to shop and to expect price concessions.

Improvement is reported in retail lines, activity in vacation supplies being marked. Building continues at a good pace, and a number of stores and factories are under construction, in addition to the new homes going up. Local manufacturers are looking forward to beneficial results from westbound freight reductions. Collections are reported as fair.

Much better prices generally are being obtained than would be expected, considering that the farm crops are much below normal, and renewed activity is anticipated in all lines at the close of the summer months.

Portland

During the past two weeks there has undoubtedly been a slight further slowing up of retail business. Extreme summer weather has had a retarding effect on purchases. Central stations are not receiving the increase in business which they expected and as a general thing are doing about what they did a year ago.

In the lumber trade, uncertainty as to revival of business and extremely low prices are the outstanding features. Prices are already so low that many mills and logging camps have closed down and will await better prices before resuming operations. Some authorities believe that the bottom of the slump has been reached and expect to see an advance in prices during August.

Oregon's wheat crop this year is only about 50 per cent of normal on account of the extreme dry weather. Building permits continue better than those for a corresponding period in 1923, which holds the record. Bank clearings are practically the same as a year ago. Collections are poor. Foreign trade is holding up well in most lines with marked increase in most cases over 1923 figures.

Los Angeles

Business in Los Angeles during the past two weeks is about on a par with the preceding two weeks, despite the recent power shortage. However, it is far below the same period for last year. It is expected that the power shortage will to a large extent prevent the sale of electrical appliances and devices for the next few months, as recommendations have been made by the leading

commercial and civic bodies that these utensils be put away until after the power shortage is past. Despite warm weather the past few weeks, the sale of electric fans has not come up to expectations. Manufacturers continue to report favorable business existing; wholesalers state their business is below that of last year and shows a decrease from the preceding month. The sale of radio apparatus continues despite summer weather conditions and is maintaining a better average than other electrical lines.

Favorable reports have been made for the month of June by food supply houses and wholesale shoe stores. Imports for the month of June show a drop of approximately one million dollars, while exports increased about nine hundred thousand dollars over the same period a year ago.

Denver

Business, as far as the money market is concerned, is regarded here as exceedingly stable. There is a general feeling of security that will be further enhanced by a successful crop year.

New building, principally schools and commercial structures, continues to break all previous records. Permits for the first half of the year amounted to \$12,103,900, over a half million dollars greater than the amount for the similar period in 1923, which established a record at the time. Permits for June totaled nearly two million dollars.

Excepting in the mining sections, there is a constantly increasing demand for power, one of the smaller central stations having added over 1,000 hp. during the past month. Secondary extensions are being made by most of the power companies. Those engaged in merchandising report average sales for the summer season, although general electrical supplies and appliances are not moving to expectations.

Radio business is not suffering, and local distributors and dealers are anticipating a record movement in the fall as a result of the opening of the new broadcasting station here and a combined radio and electrical show contemplated for the late autumn.

Salt Lake City

The business outlook for the Intermountain section continues generally favorable. Lack of water, however, is expected to have some effect on the sugar beet crop and probably will also have its effect upon some varieties of canning vegetables. This is not expected to be serious, and the agricultural interests feel that they will have a fair season. The wheat sections are reported to be in very good condition, and average crops are expected.

June building records in Salt Lake City showed an appreciable gain over the same month last year, and it is expected that July will also show an increase.

Reports from practically all of the large mining camps in this section indi-

cate a continuation of activity in the mining industry. Figures for the year 1923 show that Utah's copper production jumped to 210,118,291 lb. in that year, as compared with 79,665,563 for 1922, placing Utah in third position among the states of the Union as a producer of copper.

The usual summer quietness prevails in some lines of business. The electrical contractors and dealers, however, seem to be unusually busy, and jobbers report a continuation of better business and considerably improved collections as compared with the same period of last year.

Spokane

General business conditions and collections in the State of Washington are reported fair. This is attributed to reduced crop prospects and the slump in the lumber industry. An over-supply of labor and a smaller harvest have resulted in rates for farm labor being cut 20 to 50 per cent.

The Western Pine Association, representing the majority of the mills in this vicinity, reported a normal cut for May, but the sales showed a decrease of about 20 per cent as compared with 1923. The woodworking plants of Spokane on the whole are enjoying a good output, but practically all of them report a decrease in demand and lower prices.

Permits for Spokane building, which is confined principally to residence construction, for May showed an increase of 30 per cent over May, 1923. Packing houses in Spokane report increases in business for June, with production at a much higher level than for June, 1923.

The mining districts in British Columbia and northern Idaho are enjoying the best conditions since several years ago, with no indications thus far of a slump. Properties producing lead, silver, and zinc are working to capacity.

Seattle

Over-production of lumber in the Puget Sound district has been checked by the closing down of a considerable percentage of the mills on account of extremely unsatisfactory market conditions. However, a report of the past week shows that sales exceeded production by 8 per cent, indicating a far healthier condition than has prevailed throughout the last six months. The largest gain was in sales for the export market.

Home construction continues a striking feature of the local building situation, which is especially active. About seventeen million dollars' worth of permits has been issued thus far this year as compared with a total of twenty-three millions for the whole of last year. The tendency toward the better class of homes, with every modern improvement, is marked.

Electrical men are busy, and report that home construction has greatly stimulated sales of fixtures, lighting devices and outlets. Home-builders in increasing numbers are calling in the electrical man and getting an estimate on complete wiring of new homes, and this work is being developed rapidly in this section. Prospects for the late summer and early fall continue bright, with stocks ample and replacement easy.

Journal of Electricity

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August 1, 1924

San Francisco



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What is the Purpose of Government?

AN after-dinner story making the rounds at the present time will bear repeating to our readers. It relates that two travelers were standing on the brink of the Colorado River canyon viewing that stupendous spectacle for the first time. Said the first traveler:

"What an awe-inspiring sight! Do you know it took thousands of years to dig that hole?"

"Then," replied the second traveler, "it must have been a government job."

You smile because you know that in a few words this story exemplifies one of the greatest single failings of government. Yet in California and Washington certain elements are proposing that the government take over the light and power industry.

In the September first issue of the *Journal of Electricity* an attempt will be made to show the failure of government ownership and operation of an industry as specialized and as complicated as the generation and distribution of electricity. We feel that the purpose of government is to govern, to regulate, to administer rather than to compete with the business enterprises of its citizens. We have gathered together a mass of information and data to prove this contention. We are offering it to our readers with the hope that it will furnish them with the basis for arguments which will controvert the propaganda now being spread in behalf of the measures which would take the light and power business in California and Washington out of the hands of those who developed and administered it so wisely and throw this important industry into politics.

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You Couldn't Wish for a Bigger Market

Some of us old timers can remember when electric flatirons were given away to get them off the shelves. There was a big market but no demand. And now look at the sales!

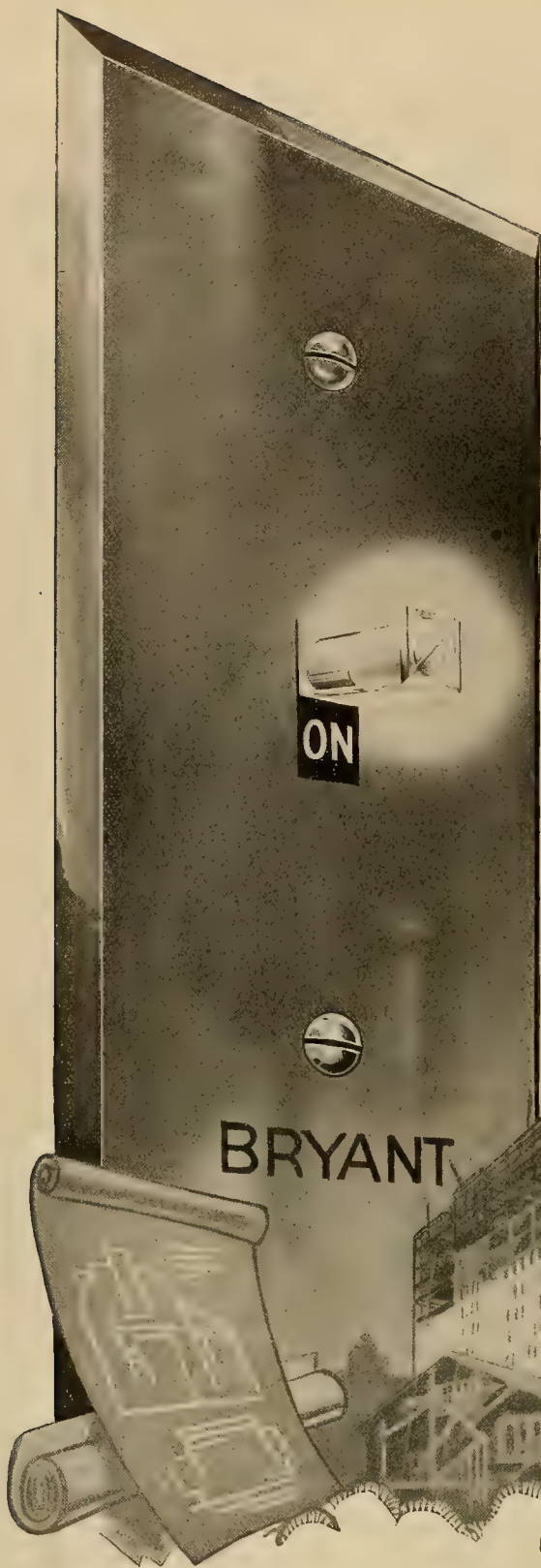
With this in mind, pause—and consider the Bryant Tumbler Switch with Bakelite Luminous Handle. It can be seen in the dark from any angle.

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1. *It completes the practical convenience of electric lighting.*
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 - c] *To replace other switches on old work.*

The most astute and successful architects and contractors in all parts of the country are enthusiastic about it and are using it on good jobs. They are making business out of it. Are you?



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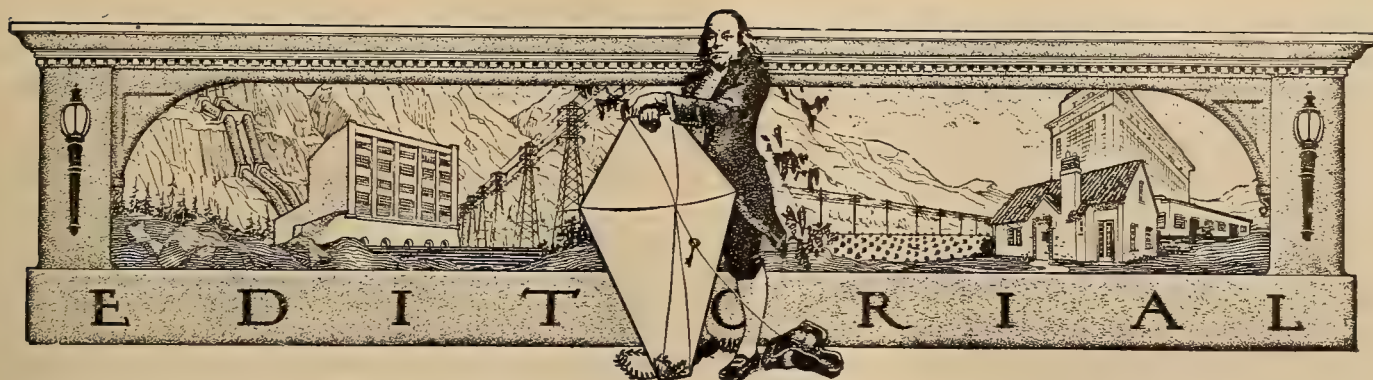


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California and Quebec Vie for First Honors

COMMENTING upon an address before the Canadian Electrical Association by P. T. Davies in which the statement was made that the annual per capita consumption of electrical energy in the Province of Quebec was 820 kw-hr., one of our contemporaries, in a recent issue, says, "This is probably the highest in the world and certainly is the highest thus far established in the two Americas." Certainly Quebec has established an enviable record but it falls short by almost 100 kw-hr. of approaching that set up by California, where in 1923 the average per capita consumption reached a total of 903 kw-hr.

California has been one of the leaders in electrical development and has been pointed to as a place where "world records" in generation, transmission, and other phases of development are constantly being set up and just as constantly being broken. Moreover California's privately owned and publicly regulated utilities have reason to be proud of their many achievements, not the least of which is the development of energy consumption to a point exceeding that in any other similar political subdivision.

In 1923 the utilities of the state sold to their consumers 3,533,436,193 kw-hr. of energy. On the basis of the U. S. census estimate of the population of the state on Dec. 31, 1923, which is given as 3,913,236, the per capita consumption for that year was 903 kw-hr., exceeding the consumption in Quebec by slightly more than 10 per cent.

A further comparison of the electrical systems of the two may be obtained from the per capita generation. A report issued by the Canadian Dominion Bureau of Statistics entitled "Central Electric Stations in Canada" 1922, shows the total kilowatt-hours generated for the Province of Quebec as 2,539,874,000. Based upon a population in 1921 of 2,361,199, the latest available figure, the kilowatt-hours generated per capita is 1,070. Records compiled from the United States Geological Survey reports of the output of electrical energy in California for 1923 show that the per capita generation in that state for 1923 was 1,310 kw-hr. In the two instances the losses between generating station switchboard and consumer's meter are 31.5 per cent and 30.5 per cent for California and Quebec, respectively. Quebec has approximately 4,000 miles of transmission lines. One single California utility has almost as much.

Thus it is seen that with a larger area, greater transmission distances and many times more miles of line, the California utilities are setting a performance record fully as good as that of Quebec.

The records of both California and Quebec are marks for other states in the United States and Canada to equal. Both are enviable and in both cases the electrical industry should feel proud of such achievements, especially since they were accomplished, despite handicaps, under private ownership.

Politics and Sound Regulation

WHAT an amazing spectacle is presented in Idaho where, as recounted in a news story on another page in this issue, the state regulatory body has issued an order indirectly attacking the electric rate schedule that the commission itself fixed after four years of tedious effort and investigation. Coincident to this "show cause" order, and of particular significance, was the dissenting opinion of one member of the commission vigorously condemning the action of his colleagues and voicing the conviction that, under the circumstances, the commission "has forfeited any right to be considered seriously, except as a necessary stopping place on the way to the courts." As a matter of fact this is actually what the Idaho Power Company has done, having filed within the past few days a bill of complaint naming the public service commissioners and the attorney-general of the state, which is equivalent to bringing suit against these parties.

Politics is said to be at the bottom of the movement which resulted in the issuance of the "show cause" order, which has disturbed both the public and the light and power industry of southern Idaho, and which threatens to reopen a valuation and rate case just settled after four years of work and much expense to the taxpayers. Furthermore, it is merely the latest of a series of orders which have tended to harass and hamper the Idaho utility to the extent that it has cut to a minimum its capital expenditures for this year, and has promised that, until a settlement of the unstable condition created by these orders is reached, such expenditures will be curtailed further. Surely this is an unhealthy situation for the State of Idaho, which, in common with all the other Western states, needs most of all new capital for legitimate growth and for the development of its agricultural and industrial resources.

The remedy for this and similar situations lies with the people. Regulatory bodies should be selected with the greatest possible care and the compensation of the commissioners, if not made equal to that of members of the supreme bench, should be such that it would attract men of the highest caliber and qualifications.

Experience has demonstrated in more than a score of cases that politics and sound regulation, like oil and water, will not mix.

The Salmon Industry and Power Development

CAN salmon be taken successfully over a dam exceeding 40 ft. in height? Conversely, can salmon fry be brought safely downstream over a similar artificial obstruction? Upon the answer to these two questions depends the future power development on the Columbia River and upon several of the major California streams—notably the Klamath River. That these two problems must be solved before the Federal Power Commission can issue permits for development of the Priest Rapids site on the Columbia is the attitude adopted by the Federal Bureau of Fisheries. Rather than wait for the answer to the questions and in the meantime witness the passing of one of the last spawning grounds of the salmon in California, the Fish and Game Commission of that state has sponsored an initiative measure which has already secured sufficient signatures to assure it a place on the November ballot, prohibiting the construction of dams of any character on the Klamath River. This action has been taken in view of the announced intention of the Electro Metals Corporation of San Francisco to construct two power dams at the confluence of the Klamath and Shasta Rivers, and the receipt by that company of a permit from the Federal Power Commission.

That the federal government must recognize the rights of fishing interests as prior to those of applicants for power sites is the attitude adopted by the Bureau of Fisheries and the salmon packing industry. From the standpoint of the importance of the fishing industry on the Pacific Coast, this attitude is perfectly justifiable. It is estimated that the annual salmon pack of the Columbia River region is valued at \$10,000,000 and that that of Alaska greatly exceeds this sum.

A cursory study of the habits of the salmon reveals some interesting facts. The salmon is a migratory fish, spawned and hatched in fresh water and spending the greater portion of its life in the sea. The adult fish ascends a stream to spawn after four or five years spent in the ocean. This annual migration takes place in the fall, the month it starts depending upon the stream. The fish spawn and then die. The eggs hatch in the spring and the fry gradually work down stream toward the sea, reaching salt water six months to a year after hatching. The important fact is that each fish returns to the stream of its birth to spawn.

It is only recently that an intensive study has been made of the habits of the fish. When power developments were considered, it was customary to

take into consideration the construction of a fishway wherever a dam was constructed on streams frequented by the salmon. But when it was determined that the fish would not cross dams exceeding 40 ft. in height and when active plans were made for the construction of dams higher than this on such streams, the fishing industry arose en masse to voice its objections.

The belief is that salmon can be mechanically carried over even the highest dams in elevators or by means of escalators. However this has not been proved. The fishwheels used on the Columbia River seem to indicate that this is possible. It has not been proved that the salmon fry can be carried over a dam to the stream below. If the flow of water is sufficient, they could pass over the spillway, but such is not always the case. A test made at the University of Washington with a small turbine operating under a comparatively low head showed that approximately 60 per cent of the fry could pass through the turbine runners without injury. It is believed that with larger turbines this percentage can be raised materially provided the fish can survive the pressure to which they would be subjected in the penstock and the turbine itself.

Already a committee composed of representatives of the fishing interests and the power companies of the Northwest is engaged in the study of this problem. An experimental elevator is to be constructed at the Long Lake plant of the Washington Water Power Company. Apparently in this district the power interests and the fishing industry are in complete harmony. Both desire a fair solution of the problem and both are aware of its importance.

In pushing an initiative measure to prevent power development on the Klamath, we feel that California is acting too hastily. Would it not be better to follow the example of the Northwest and definitely study the situation rather than rush blindly forward with a law which precludes development of the enormous power resources of the northwest portion of the state? Cheap hydroelectric power is such an important economic factor in the development of so rich a district as the Klamath River region that it seems foolish to take such action. Especially is this true when the opportunity exists for King Salmon and King Kilowatt to cooperate to mutual advantage.

The Passing of Benjamin G. Lamme

IN the passing of Benjamin G. Lamme on July 8 last, the electrical industry and the world in general has suffered a great loss. With Mr. Edison, and the late Dr. Steinmetz, Mr. Lamme was one of the "Big Three" in electrical engineering now reduced to one surviving member, Mr. Edison.

It is related of Mr. Lamme that, during his association with the Westinghouse company, no less than 150 inventions, many of them epoch-making in their character, have been credited to him. Every conceivable recognition has been awarded to him by his fellow engineers and scientists. Yet, outside of professional and industrial circles, Mr. Lamme was

comparatively unknown. He never became material for copy at the hands of the general magazine space writer. That sort of thing was utterly foreign to his nature.

Those who knew him best, his associates and especially the younger men in the Westinghouse company, speak with genuine affection of his modesty, his never-failing kindness and consideration for the runners-up in the electrical industry. Always approachable, always glad to lend the aid of his ripe experience and judgment toward the solution of the problems that were perplexing his juniors, he became more than a mere man; he became an institution whose passing will leave a void in the ranks of the profession that will indeed be difficult to fill.

A Practical Application of the Golden Rule

THE electrical industry has long been noted for its cooperative spirit and for its generous support of worthy causes. From the manufacturer to the contractor-dealer, it has always given freely of its aid and of its substance whenever called upon to do so. Recently there arose an instance of this spirit of generosity that transcends anything we have known of. Elsewhere in this issue is the story of the cooperative effort of the entire electrical industry of San Diego, Calif., in behalf of the children of tubercular parents in that city. This act of human kindness included the mayor of the city, a major-general of the Marine Corps, the members of the local union of the International Brotherhood of Electrical Workers, the jobbers, the manufacturers and the contractor-dealers. In less than one day, working as a unit and under the direction of competent executives, this united organization, using materials that had been donated and labor that was paid for only in the return that comes from a charitable deed, performed services to the Helping Hand Home that would have cost at a conservative market valuation in excess of \$3,000. The work was done and the completed job turned over to the officials of the home with the compliments of the Electrical Exchange, a composite organization of the industry in San Diego. Who shall say that the milk of human kindness has soured within the breast of the electrical fraternity?

Closer Attention Should Be Paid to the Extension of Credit

THE proper ratio of electrical contractor-dealers to population seems not to be very clearly established. In some localities there are found more firms of this class per thousand inhabitants than are in other cities or towns of the same size and of similar general characteristics. No one has yet offered a ratio figure for the guidance of the industry. It is a fact, however, that in many cases the greater number of contractor-dealers per thousand people is occasioned by the liberality of jobbers' credit policies. It seems to be the case that in many instances jobbers are extending credit beyond an individual's or a firm's capacity. Such action cannot but react disadvantageously. It creates an unfair competition

by attracting more men to this field of activity and this uneconomic competition is often demoralizing to the entire local branch of the electrical industry. Too liberal credit, or the extension of credit without due regard to all factors bearing on the financial and moral hazard, encourages inexperienced and often incompetent men to enter the business. The results of such occurrences are written boldly in red ink on the pages of electrical merchandising history. The practice of encouraging additional retail outlets in a locality already well served, merely for the purpose of meeting competition between jobbers, should not continue.

Is There a Summer Slump in the Electrical Business?

TRADITION, precedent and rumor are powerful factors in our business life. Take, for instance, the so-called "summer slump." It is traditional. So many business men expect it that it is bound to have a psychological effect upon trade. We are inclined to think the summer slump is somewhat of a myth. Figures recently compiled by the New York American seem to bear out that belief. A survey of business during July and August—the months when the slump is supposed to be at its height—showed that

- Street car traffic is 99 per cent normal
- Telephone calls are 87½ per cent normal
- Factory employment is 98½ per cent normal
- Factory payrolls are 98 per cent normal
- Savings bank deposits are 100 per cent normal.
- Wholesale drygoods are 97 per cent normal
- Wholesale hardware is 95½ per cent normal
- Building contracts are 99 per cent normal

We are ready to back up these facts against any "they say" statements regarding the summer business situation.

The above figures are general. However, let us get specific about the electrical industry. The jobber, in order to have his fall stock on hand after Labor Day, must order in June and July. The dealer, if he is to be prepared for the fall buying which starts in September, must do his ordering in July and August. In most districts, summer is the period of greatest building activity owing to its advantageous climatic conditions. Contractors, then, are at the height of their buying.

The statement that the public does not buy during the summer does not hold as far as the electrical industry is concerned. Summer is the time to sell electric fans. Vacationists are good prospects for radio sets. The demand for lamps is not affected. Hot weather is a good time to sell electric ranges. Toasters, grills, percolators and waffle irons—the entire lot of so-called table appliances—have a ready demand, for the housewife is looking for something which will make the work of preparing meals during hot weather less irksome.

We repeat that the summer slump is a myth. Business is there for manufacturer, jobber and retailer. Hot weather brings the desire for relaxation, which is another word for laziness. If business is properly cultivated during the summer, it can be had.

CURRENT COMMENT



California is faced with a water and power shortage—the worst in the history of the state. Every conceivable step is being taken to meet the emergency,

The California Press and the Power Shortage

both by the privately owned utilities and by their customers. Yet there are papers in the state which blame the power companies for an unforeseen act of Providence and which are using the fact that there is a power shortage as an argument in favor of the Water and Power Act. How absurd the arguments in the following editorial from the Oakland (Calif.) Post-Enquirer must seem to anyone with an average amount of intelligence:

Housewives down in southern California are being told they must not use their electric irons, electric washing machines, electric vacuum cleaners.

In some places in the southern part of the state people are allowed to use telephones only during a short interval in the day.

The use of power in factories is being restricted. That means a serious, harmful condition of affairs, caused by a power shortage. The power shortage is caused by a water shortage.

But WHY should there be a shortage?

The answer is that the water and power business in California is controlled by a number of competing private companies more interested in making money than in conserving and co-ordinating intelligently the water and power resources of the state.

The proposed California Water and Power Act, designed to protect and further the public interest AT ALL TIMES, provides for such an emergency as one section of California faces now.

But Eustace Cullinan, administrator of the power company slush fund used to defeat the Water and Power Act in 1922, said in an article published Oct. 1, 1922:

"There is an abundance of electric power in California for all uses. . . . These established facts have rather flattened out the noble band that offered us the water and power act as a means of salvation from the 'cruel power barons' and promised to set every stream in California busy making power for a population already supplied with all it needs."

In 1922, A. B. West, president of the Pacific Coast Electrical Association, said that the power companies were willing to face the "public ownership threat" squarely on their record of achievements, particularly the achievement of providing adequately against all regional power shortages.

Unfortunately, something has happened to that record.

The late John A. Britton, on Jan. 25, 1922, in a published article, wrote:

"Let us stop talking about power shortage. . . . There is no power shortage today and with the program of power development marked out there will be no power shortage in the future."

The future he was talking about is here, and there is a power shortage. So much for that.

The moral is: Don't believe all the corporation gentlemen tell you and are anxious to have you believe.

They are especially anxious to have the public believe that it cannot manage its own affairs; that it should not own the necessary public resources and utilities; that through some inscrutable arrangement with ultimate wisdom, the snow which falls in the mountains and generates power as it melts

and runs down to the sea does so for their own private benefit and remuneration; and that any effort on the part of the public to control in its own behalf this natural resource of water and power is ill-advised impertinence.

That's what they will tell you, just as they told you there couldn't possibly be any power shortage under their benevolent reign. But the people are becoming wise, slowly.

The effort of the power companies, trying to stop the orderly process of evolution toward the efficient public ownership of public utilities, is as futile and pathetic as the efforts of the old hand weavers of England in trying to stop the coming of the machine loom.

Contrast the above with the following saner view which is adopted by the Los Angeles Times, a paper which is more familiar with the shortage because it is the spokesman for the territory most affected:

The year 1919, according to the records, brought the lightest rainfall to California in a generation. Basing their provision against any probable emergency upon the low figures for that year, the light and power companies made what seemed to be ample safeguard against any shortage.

But the unexpected happened. No human wisdom could foresee that 1923-4 would hit a lower level. So it has come about that, despite vast increase in the capacities of the private companies and the growth of supply at the command of the city's Public Service Bureau, the amazing growth of southern California, taken together with the shrinkage of nature's supply of water, has outstripped all these and brought us to the urgent need of conservation now for the common welfare.

The present emergency is temporary but acute. Its kind has been the lot of many other American communities. Only in degree is it truer of California than of other states that water is its life fluid. It is a universal human need and an inscrutable Providence sometimes withholds it to the point of peril.

Perhaps it is to test our mettle. At any rate, such a test now confronts us. Pending the augmentation of the present supply, which is going on at the highest possible pressure, it devolves upon us, small and large consumer alike, to make sacrifice in such proportion as shall be fixed by the State Railroad Commission, the power companies and civic bodies with as much impartiality as they can.

If the present emergency is met in the right spirit it will soon pass with slight harm or discomfort to anyone. The autumn rains and the rapid construction of additional large supplies of power will bring relief and, it is assured, a wide margin of safety that will be ample for any possible future situation.

But, pending that time, the public must make the work of conservation easy for all by a pooling of their help and sacrifice, as the light and power companies are doing with their "juice." The alternative, let it be said frankly, will be a more serious situation in the late summer. We must be resigned for some weeks ahead to get along without familiar conveniences and even some of the things we have come to regard as necessities.

The burning of a few needless lights or the making of morning waffles in the electric device that is so handy may not seem important in any single home. But in the aggregate of thousands of homes it is a big factor in a highly important situation. The power so used is needed to give men employment in shops and stores.

Cut out the needless use of "juice" in every form. The large consumers are making heavier sacrifices under the direction of the State Railroad Commission which has taken charge of the situation as its paramount duty at this time.

The filing of the petitions for the Bone "Free" Power Bill with the secretary of state at Olympia, Wash., further emphasized the fact that only in Seattle and

The Farmer and the Bone Free Power Bill

Tacoma is the feeling particularly strong for this measure. By far the greatest majority of signatures were from these two cities and in eastern Washington

hardly more than a thousand or more people were sufficiently interested in the question to affix their names to the petitions. If the rural press of the state can be taken as a gage the measure will not receive many votes outside the two cities which are at the present launched upon municipal ownership campaigns which even now are partially regretted. For example, the following editorial from the Shelton (Wash.) Mason County Journal claims the farmer will have to pay the bills if the measure passes:

The trend toward enlarged municipal ownership and civil service organizations in the cities directs attention to the fact that the public employees are fast reaching the point where they are in control of local elections and practically so as regards state affairs and candidates, and thus more or less of a menace to the taxpayers generally.

The Journal does not recall an instance where any of the organizations have gone on record for lower salaries or reduced taxation, as affecting their own status, but the movement is ever toward increased demands in the matter of more wages or less hours of labor, either of which spells more taxes for the rest of the state.

For this reason alone, if for no other, the voters of the state should be slow in adopting any more public ownership measures than now exist, or in building up a larger body of public employees to wield more political power, and by reason of their closer organization carry through projects in which their interest is largely selfish.

When it is considered that rarely does more than fifty per cent of the qualified electorate take interest enough to vote, it can readily be seen that the organized public employees, although they may be a minority of the whole readily wield sufficient influence to carry through their demands and fatten up their jobs.

The unanimity with which Seattle is supporting the Bone "free power" bill and the frantic appeals to get signatures in Seattle indicates the anxiety of this element to further expand the avenues for public employment, even to reaching outside for other resources to add to the opportunities for such expansion, and to extend the political power of the city over the state.

That the farming and country dwellers should be gulled into handing over the only club they hold for protection into the hands of their city "friends" passes comprehension, and that any farm organization should offer encouragement savors of an unholy combination in which the farmer will as usual be the "goat."

The private interests are doing a good job of supplying the state with power in the opinion of the Tacoma (Wash.) News-Herald, which says:

It would be a grave economic error to handicap future development of our power resources by independent interests, and this would most certainly be one of the results of a favorable vote on the Bone Bill. Encouragement should rather be given to the full employment of this magnificent resource, which is the basis of enlarged and economic industrial activities, of which we stand in immediate need. The State of Washington could commit no more serious error than to assume an attitude of hostility toward constructive enterprise by indulgence in this socialistic experiment.

The Colfax (Wash.) Gazette thinks it sees the joker in the Bone Bill in the following editorial:

The attempt to put over an initiative measure for public ownership of city, county and state electric power plants has the above heading which is very misleading.

The idea that a great superpower program is to supply electric current to the entire state without expense to the

consumer, is very attractive. But can an intelligent man or woman believe such a statement?

The big cities in the State of Washington are already bonded almost to the limit, and to build large hydroelectric plants and distributing systems will strain the credit of the entire state, and how can the taxpayer escape?

To create the impression that when cities, counties, districts and the state are fully launched in the power business, that electric energy will be furnished free of cost to the consumer, is a tremendous fraud.

The joker in the whole superpower program is revealed in the argument made that the big cities will have to have cheaper power than the country districts because they are already more heavily taxed. Anyone should see the joke.

Even in California the rural press is not fooled by the arguments of the proponents of either the Bone Bill or the California Water and Power Act. The San Leandro (Calif.) Reporter in a recent editorial takes the following stand:

In several Western states—notably California and Washington—an effort is being made to put the state into the power business.

The promoters of this form of state socialism promise cheap power, and some of their newspapers and public speakers call it "free power."

There will be on the ballot in November in Washington, a bill referred by the legislature allowing city-owned hydroelectric plants to supply country districts.

This bill would impose a 5 per cent gross earnings tax on the cities for all power sold as a source of state revenue.

Another bill in Washington proposes to permit cities to sell electric power tax-free and these two measures conflict with each other.

Generally speaking, initiative measures putting the state into business have not fared very well in the West. In Washington, out of 52 bills with the secretary of state since 1907, only 10 got enough signatures to get on the ballot and, of these, only 3 were enacted into law.

The best advertisement for Washington and California is to vote down any kind of socialistic measure.

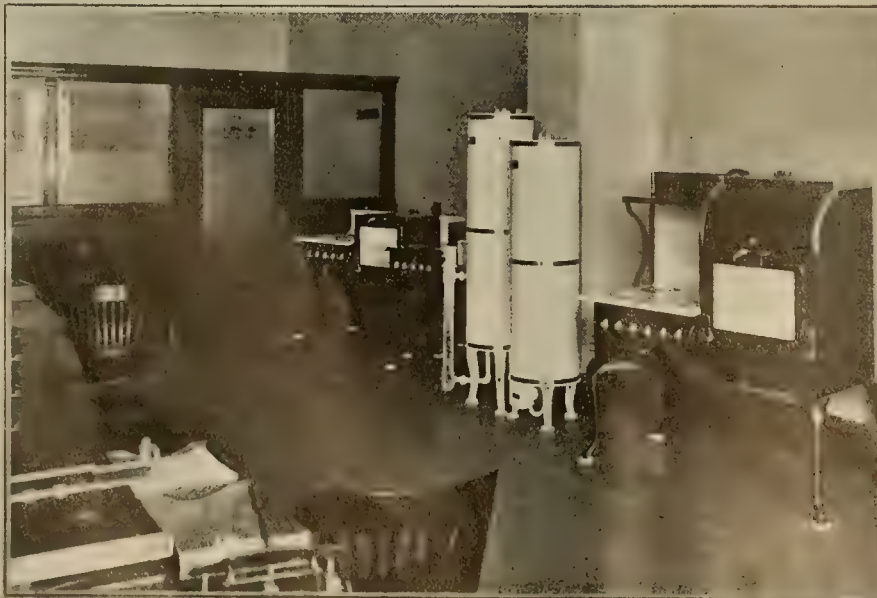


Gale in the L.A. Times

SPEAKING OF POWER CONSERVATION



FINDING that the growth of San Diego was putting a serious strain upon its office facilities, the San Diego Consolidated Gas & Electric Company in 1923 purchased the Timken Building, entirely remodeling the structure and moving in on June 16, 1924. The new quarters are in keeping with the desire of present day utilities to serve the public to the fullest possible extent. The commercial, collection, investigation and securities departments, shown in the accompanying views, have been placed on the main floor, for the greater convenience of consumers. At the top is one corner of the lobby, in the center is a general view of the offices and below the commercial department.



The Co-ordination of Irrigation and Hydroelectric Power

By Louis F. Leurey

Electrical Engineer, San Francisco, Calif.

IN a recent issue of the Journal of Electricity John D. Galloway contributed a very able article on "The Interdependence of Irrigation and Hydroelectric Power." His article sets up in a most explicit and logical manner the mutual interest that exists between the high-head high-level type of plant for electric power purposes only, and the low-head low-level type of plant for irrigation purposes primarily, with an electrical generating plant as a byproduct. It will be the purpose of this article to suggest a machinery by which the admitted interdependence can be officially recognized and by which a co-ordinated function can be established between private and public interest without involving the financial participation or credit of the state.

In a paper prepared for the San Francisco Chapter, American Association of Engineers, and published in "Pacific Engineer," October, 1922, Edward E. Carpenter has developed the following tables showing the magnitude of possible electrical power byproduct for a number of definitely projected California developments. Mr. Carpenter states:

"The importance and magnitude of these possible blocks of byproduct power are, I believe, not generally realized. The following data regarding five of these typical installations, three of which have progressed to a point of assured consummation in the near future, are presented to assist in comprehending it:

Project	Height of Dam Effective Ft.	Storage Acre-feet	Irrigated area acres
Modesto-Turlock, Don Pedro, Tuolumne	270	280,000	250,000
Merced-Exchequer, Merced River	295	270,000	190,000
Madera, San Joaquin River	300	600,000	350,000
Pine Flat, Kings River	315	600,000	850,000
Iron Canyon, Sacramento River	145	961,000	225,000
Total		2,711,000	1,865,000

	Projected Annual Output Total Kw-hr.	Projected Annual Output Kw-hr. Per Acre
Modesto-Turlock	90,000,000	360
Merced	121,000,000	630
Madera	200,000,000	570
Pine Flat	440,000,000	520
Iron Canyon	320,000,000	1,540
Total	1,171,000,000	600

"The hydro output of the Pacific Gas and Electric Company for the year 1921 was 1,025,000,000 kw-hr., and the output for the whole State of California for the same period was 3,250,000,000 kw-hr. The above five projects, embracing in round figures 1,900,000 acres of the state's agricultural area, populated by communities rural in character and not conditioned to become large users of their power byproduct, are beyond question capable of producing as an incidental to their irrigation function a block of hydroelectric energy approximately equal in amount to the total present hydro output of the Pacific Gas and Electric Company and to one-third of the hydro used in the entire state."

It is quite apparent from the foregoing tables that the irrigation byproduct electric plants form

potentially a very important factor in future electric power production and will undoubtedly be a factor of the highest importance if properly co-ordinated with the high-head high-level plants designed for primary power purposes.

Upon even a cursory analysis of the low-head low-level type of plants as built by the irrigation districts, it can be seen that they never contain the elements of a large power consuming district. They consist of areas of valley land irrigated from foothill storage by gravity and consequently are not candidates for electric power pumping as are other valley areas which are irrigated from sub-soil waters.

There is often an appreciable amount of auxiliary pumping required in local areas where ground water levels approach a dangerous height but this feature is a comparatively minor factor in the total electrical load. The only potential sources of considerable power usage are the small cities and towns which are located within the main agricultural areas, but which rarely, if ever, contain any of the heavy industrial elements that constitute the large consumers of electrical energy.

The irrigation districts are further at a disadvantage in attempting to secure a market beyond their own districts, first, due to the legal restrictions with which their powers are hedged, and secondly, due to their inability to meet large demands on account of the seasonal character of their output. These facts have been exemplified quite recently in the case of the Turlock Irrigation District which, in spite of an overwhelming sentiment in the community for the local consumption of its electrical byproduct, has found it a practical necessity to sell a large block of power to a public utility network, and has further found it a practical necessity to try to secure an electrical stand-by service to meet the obligations which they have incurred for power service and which it is difficult to meet at all seasons of the year due to the conditions of stream flow.

In the low-head low-level type of plant the generation of electrical energy follows closely on the demand for irrigation water and it, therefore, bears a definite relation to the water problem involved. If, therefore, a flexible and economic market can be provided for the electrical byproduct, then we have laid a foundation for the solution of the problem of water storage relations. It is not to be denied that fundamentally each class of property, both the privately owned hydroelectric plant and the politically owned irrigation plant must be operated largely in accord with the principles of local self-interest, and the solution of the problem lies in find-

ing some machinery that will permit the self-interest of each to be merged in a common and profitable channel. It is manifest that due to the complexities of the various interests that none but a state agency is capable of performing this co-ordinated function, and that if this state agency is to function completely it must, in this case, do more than regulate the market for electric power and must, to a very large extent at least, control the elements of production. The writer wishes again to quote from the article by Edward E. Carpenter:

"It is not at all likely that the development of these low-level low-head projects will be undertaken by the power companies; their interests will not lie in that direction. These developments will be progressively accomplished mainly, if not entirely, by irrigation groups as a matter of agricultural necessity. But their potential energy product, whatever amount it may be and whenever it may become available, must, as a matter of public economy be applied to the greatest extent possible to useful purposes. To meet this condition the widest possible market must be provided for its application and absorption. No condition of local usage will answer the requirements in this case and no market short of a great, combined, state-wide usage will suffice as a market reservoir capable of maintaining reasonable variations of level and permitting the greatest economic advantage being taken of these huge blocks of agricultural power.

"Not only must this broadening influence be applied to the power usage or power market phase of the problem, but a similar policy must be impressed upon the power production phase. The intimacy of these two elements of the power industry has been previously pointed out. With this in mind, it is obvious that adjustment or rearrangement of the usage phase must, as an inevitable complement, be reflected upon the production phase and that, in order to maintain the best balance between these two ultra-sensitive factors any agency empowered or authorized to control one part must of necessity have the same power to control the other.

"That this regulating adjusting function can be only carried out by a state governmental agency is obvious. But such an agency, in order to meet the requirements of the case, must be conceived and organized with a full comprehension of the problem to be dealt with and the conditions to be met."

The privately owned public utility companies of the Pacific Coast have already solved the problem of their mutual relationship in serving the various communities of that area by comprehensive systems of interconnections and the exchange of power in accordance with their individual requirements. This practice very measurably increases the stability of each company's service and the interest of the consumers is conserved through supervision by state public utility commissions of the terms of the inter-connection contracts.

It is but a step from this arrangement to one which would also include the energy generated by political subdivisions and delivered by them into a general network. The generation of byproduct power has been of such recent origin that time has not yet developed a well defined principle for its utilization and a number of unsound theories have developed which are materially retarding the solution. There is undoubtedly a strong and widely held belief among the farmers of irrigation districts that the electrical byproduct is their own private matter and that no one on the outside has the right to interfere. On the other hand there is a growing public opinion which conceives that, as the irrigationists derive their special powers from the state, they should in turn render a service to the state through the beneficial use of their electrical byproduct, as

they now render a service through the beneficial use of waters for irrigation. There is no questioning their prior right to stimulate, through the lowest sound rates, the fullest use of electrical energy within their own boundaries, but they owe a duty to the state to see that the residual energy be not throttled at the power plant or wasted by the establishment of uneconomic rates.

The public utility commissions of the various Pacific Slope states are peculiarly well equipped to handle the relations between private and political utilities because of the fact that most of the energy in this territory is generated by hydroelectric plants, and therefore the engineers of these commissions must be thoroughly informed on hydraulic problems as well as on the problems of electrical transmission and distribution.

They would, therefore, grasp all the elements that enter into the mutual relation between a high-level plant and its storage for power purposes and a low-level plant and its storage for irrigation. If granted sufficient power they could equitably reconcile the interests of each and also the interest of the general public.

This plan would not mean that the public utility commission would in any way usurp the functions of state water commissions or of state engineers in determining the primary problem of establishing an irrigation district, but they would only enter into the problem and begin to function when the irrigation district had declared its intention of entering the power field by the establishment of a byproduct plant. This service, to be equitable and to conserve all interests within the state, would necessarily have to include byproduct plants such as are established by cities in developing a municipal water supply.

The objection will at once be raised that such a proposal could never carry, due to the resentment of municipalities in the encroachment of the state on their special powers, but on the other hand, with the ever increasing acuteness of water problems of the Pacific Coast, cities are now going into the remotest mountain areas and even into other states for an adequate water supply and an incidental electrical byproduct, and the encroachment, if any, is on the part of the municipalities with the people of the state largely holding the bag. All cities of a progressive character now recognize without argument that the conservation of the back country resources is fundamental to the city's ordered growth and it is, furthermore, generally recognized that if an agricultural area had to bear its proportionate share of the cost of electrical service, such service could no longer be considered as a farm adjunct or even as an amenity to life on the average farm.

The whole trend of public thought today is against the multiplication of further public commissions, but on the other hand, it is a well recognized fact that where existing commissions do function properly, it is most profitable for the states to employ them intensively through the principle of regulation as opposed to the principle of investing the state's capital in an enterprise that is not fundamentally a life and death matter to all the people.

Hatching Chicks Electrically



By Harold E. Bell
Electrical Engineering Department,
Oregon Agricultural College, Corvallis, Ore.

NO industry has been improved more in its own scope and sphere than artificial incubation. Although the art of incubation of chickens has been known to the Egyptians and Chinese from time immemorial, the improvements of the machines have taken place within the last forty-five years. The incubators a few years ago used the kerosene lamp for the heating of water, which in turn heated the egg chamber. This method has gone through many changes and the oil lamp, the gas lamp, and the coal stove machines are still in use, but the electric incubator is fast replacing these older methods in most large installations and is now widely used for general incubation.

The electric incubator has proved very satisfactory in commercial hatcheries because of certain important advantages it possesses over other types of incubators. The electrical method is cleaner because no fumes are given off; it is as economical as other means of heating since the greater cost of heat energy is compensated for by the lower cost of labor. The fire hazard is greatly reduced by the elimination of elements which become hot enough to ignite wood and the cleaning and filling of lamps and the taking of numerous thermometer readings are eliminated. One of the many electrically equipped incubators on the Pacific Coast is that of the Oregon-Corvallis Hatchery, at Corvallis, Ore. This plant has a capacity of 80,000 eggs at one hatching and has been in operation for two years. The following data tests are based on this installation—the test data being taken during the period from Jan. 26, 1924 to May 1, 1924.

Hatchery Equipment

The plant consists of a wooden building 44 ft. x 150 ft. which contains 131 incubators with a capacity of 612 eggs each. Double walls packed with

sawdust for heat insulation are used and the floor is covered with dirt and a layer of sawdust and shavings to reduce heat radiation. The incubator room has only a few small windows to further keep down heat losses. The building is heated by the incubators alone, and as the room is well insulated the temperature varies over the very small range of from 60 to 70 deg. F.

All of the incubators in the plant are heated electrically and the source of power is easily changed from the central station service to a gas engine driven generator which insures a constant supply of power. Each machine is fed by drop cord from the ceiling. Groups of six machines are served from one feeder and each feeder terminates in the main distribution cabinet with a fuse block and a switch for protection and control. Power for the plant is supplied from a three-wire 110-220-volt circuit. The auxiliary power supply is furnished by a 25-kw., d.c. generator driven by an automobile engine. This generator is not large enough to carry the entire plant but 42 to 48 incubators may be operated from it at one time and by changing every ten to fifteen minutes this is sufficient to keep all incubators up to constant temperature. A protective device is installed in conjunction with the main switch service to give warning of a power failure. An electromagnet holds a battery bell circuit open against gravity, so that when the voltage drops below normal the bell circuit closes and sounds an alarm.

Each incubator is heated by ten Petaluma Incubator Company elements each having the following characteristics: Size of wire, No. 20 B. & S. gage alloy wire; length of wire, 9.5 ft.; resistance at 20 deg. F., 2.83 ohms; resistance per mil foot, 303 ohms; full load current, 4 amp. The elements are placed in the top of the incubator and are spaced 7 in. center

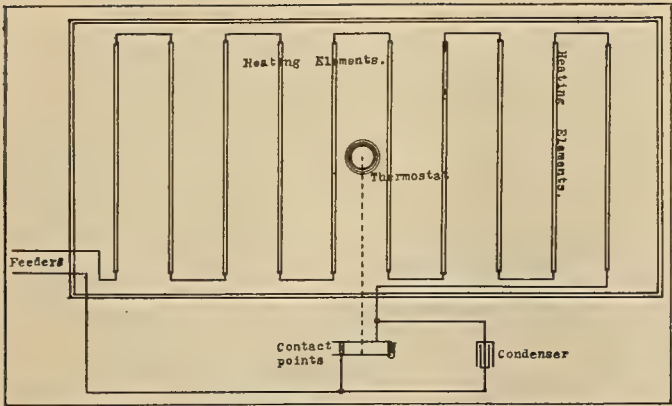


Fig. 1 showing the electrical circuit of one incubator.

to center with 6 in. from the end elements to the end of the compartment. The electrical circuit for one incubator is shown in Fig. 1. The contacts are controlled by an ether wafer thermostat. A condenser is supplied to quench the arc and prolong the life of the contacts when the auxiliary d.c. service is used. If both sources of power were a.c. the condensers would not be necessary.

A test was made on the plant for determining the cost per hatch, cost per hundred chicks, and the power consumption of the machines. Three methods of test were used to obtain the desired data. In the first a graphic recording wattmeter was installed on a group of six machines to show the variation of power consumption. The chart from this meter showed that the power in each individual machine was on for very short intervals of time only. The current in no one machine remained on for more than a minute to a minute and a half with the excep-

tion of the time necessary to reheat the eggs after cooling or turning. During such periods the current remained on for an hour at a time. The chart also showed that the power consumption began to drop off on the fourteenth day. This is due to the fact that the growth of the germ at this period begins to use the latent heat stored within the egg.

A characteristic curve of the kilowatt-hour consumption of one incubator during the period of incubation is shown in Fig. 2. The energy used during the first day is relatively high on account of the initial heating of both the incubator chamber and the eggs. The daily consumption then remains constant at 4 kw-hr. per day until the fourteenth day when the formation of the chick reaches the stage in its development where it does not require as much artificial heating. From this time on until the chick is hatched, the consumption gradually falls off and drops as low as 1 kw-hr. per day with a room temperature of 65 deg. F.

A second test consisted of obtaining recording voltmeter charts for a period of two months to determine the voltage regulation and the number of interruptions to service. It was found that the power went off on an average of once in every three days, but only once a season for a long enough period to require the starting of the emergency plant. The average duration of the interruptions was from five to eight minutes. The voltage had about the same characteristics from day to day with a maximum of 122 volts and a minimum of 114 volts.

A third test was made with four recording watt-hour meters on four different incubators in different parts of the plant. The kilowatt-hour consumption of each incubator per day and per hatch was determined from these meters. It was found that the temperature of the room affected the consumption

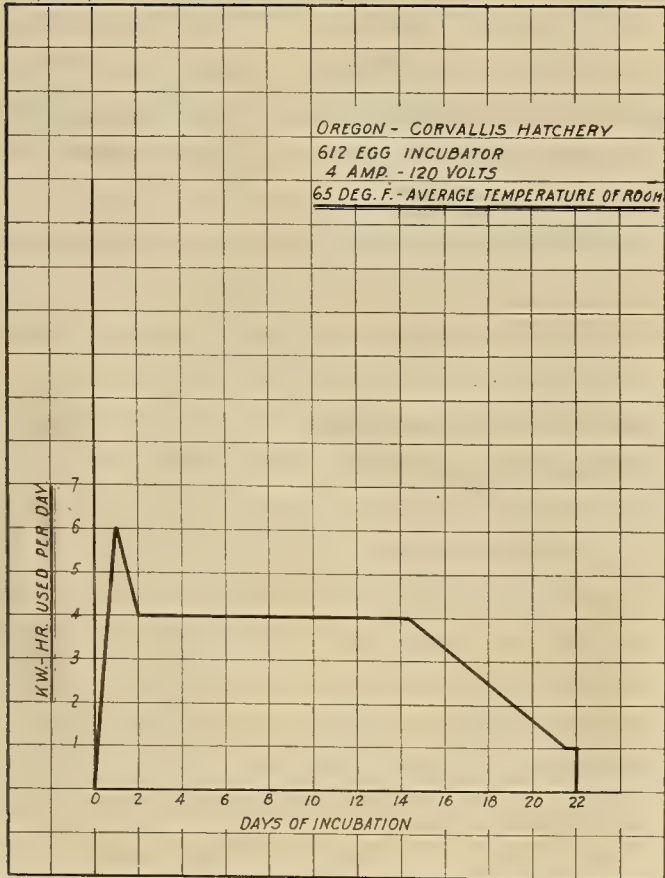


Fig. 2 showing kilowatt-hour consumption during a hatch.

TABLE I.—COST PER HATCH IN DOLLARS

Power Cost per Kw-hr.	Average Room Temperature During Hatch				
	50 deg. F.	60 deg. F.	70 deg. F.	80 deg. F.	90 deg. F.
1	\$1.00	\$.80	\$.60	\$.45	\$.35
2	1.95	1.60	1.25	.85	.50
3	2.95	2.40	1.80	1.30	.70
4	3.90	3.20	2.40	1.70	.80
5	4.85	4.00	3.00	2.10	1.20
6	5.80	4.70	3.60	2.50	1.45
7	6.85	5.60	4.30	2.95	1.70
8	7.70	6.30	4.85	3.35	1.90
9	8.70	7.10	5.50	3.80	2.15
10	9.70	7.90	6.10	4.20	2.40
11	10.70	8.70	6.70	4.60	2.60
12	11.10	9.50	7.30	5.00	2.90
13	12.60	10.30	7.90	5.40	3.10
14	13.55	11.05	8.50	5.85	3.35
15	14.60	11.90	9.10	6.30	3.60

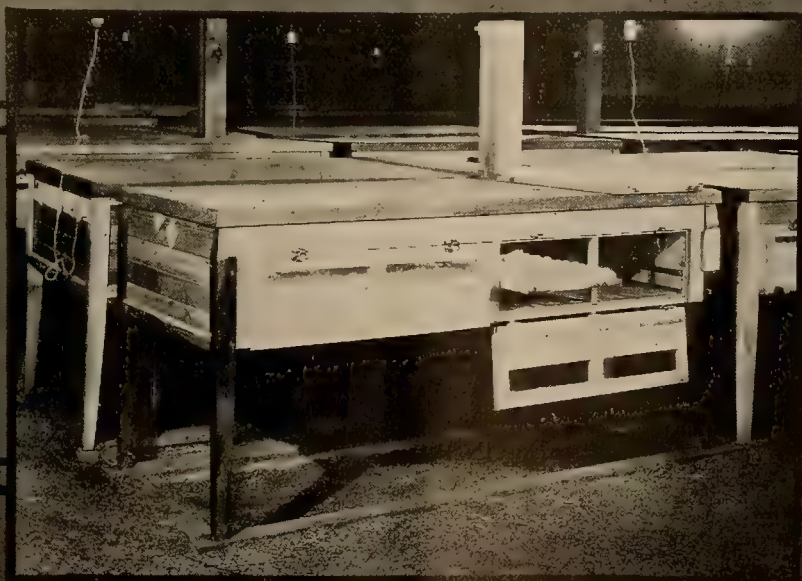
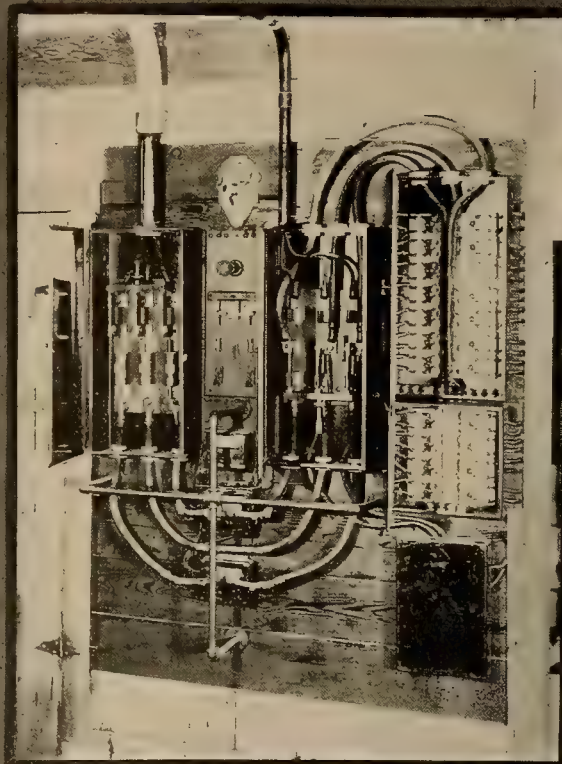
of power materially. This is shown by the curves plotted on cost per hatch against cost per kilowatt-hour at different temperatures, and is brought out in Fig. 3 and Table I. The results of the test were as follows:

Number of incubators	131
Egg capacity (per machine).....	612
Egg capacity (total)	80,172
Connected load	61.9 kw.
Connected load (per machine).....	475 watts
Maximum monthly kw-hr.....	14,160
Maximum monthly power bill.....	\$354.90

Costs	
Cost per hatch of chicks, power.....	\$1.90 to \$2.10
Cost per hundred chicks, power.....	.50 to .58
Cost per hatch of chicks, power and labor.....	4.35
Cost per hundred chicks, labor and power.....	1.20



ARTIFICIAL incubation with electricity furnishing the heat has made rapid strides at the Oregon-Corvallis Hatchery, views of which are shown. At the top is the interior of the hatchery with its batteries of incubators. At the right is the main service panel, showing, in the center, the alarm system which indicates an interruption of service. Below is a closeup of one of the incubators



In the two columns in Table II, giving the percentages of chicks that hatched, one percentage is on the basis of the total egg count, while the other is on the basis of the fertile egg count. It is obvious that only a fair average of eggs hatched can be ob-

TABLE II.—PERCENTAGE OF CHICKS

Number of Eggs	Number of Unfertile Eggs	Number of Fertile Eggs	Number of Chicks	Per Cent of Chicks Based on Total Eggs	Per Cent of Chicks Based on Fertile Eggs
612	101	511	354	57.8	69.3
612	73	539	402	65.6	74.6
612	70	542	396	64.7	73.0
612	89	523	327	53.4	62.5
612	100	512	380	62	74.2
612	71	541	382	62.4	70.6
612	51	560	338	55.1	60.4
612	62	550	406	66.3	73.8
Ave. 612	77.2	535.4	373	60.0	69.8

tained by the hatchery because of the loss due to the unfertile eggs, caused by injurious jarring in

During the period of incubation the eggs must be cooled down to 98 deg. F. several times and therefore to secure economy of time in the egg cooling process, the room temperature should not be above 95 deg. F. To insure the supply of men for employment in the hatcheries for reasonable wages, the temperature of the incubator room should be somewhat lower than 95 deg. and an average of from 85 to 90 deg. F. has been found best.

The third and most important factor to be considered is that of ventilation. It has been shown by experimentation that when the temperature of the incubator room is raised to 85 or 90 deg. F. the ventilation in the type of incubator manufactured today becomes inefficient. However, a study of Fig. 3 shows that a large saving in the cost of power per hatch is accomplished by having the room temperature high. This saving could be effected in the same manner by heating the room with some cheap fuel, but this would necessitate forced ventilation of the machines. Poultrymen agree that because of insufficient ventilation, and the burning of oxygen from the air by the room heater if fuel fired, the incubator rooms cannot be heated to a high temperature if the best results in hatching are to be obtained. However, the combination of forced ventilation and high room temperature has not, as yet, been attempted. Forced ventilation would obviously do away with these difficulties as it would replenish the supply of oxygen in the air and would provide fresh air at a warmer temperature for the eggs.

The minimum temperature is governed by the factors of freezing, storing and cooling of the eggs. The temperature at which eggs freeze is 28 deg. F. and the temperature at which incubation begins to take place is 68 deg. F. In case the incubator room is used for storing the eggs for the next hatch, the temperature must therefore be above 28 deg. and below 68 deg. F. The standard storing temperature is 55 deg. F. In cooling the eggs during the period of incubation the temperature of the room must be high enough to insure the even cooling of the whole egg to 98 deg. F. instead of the shell only.

Another feature of electric incubation upon which experimental study could advantageously be undertaken is that of the most desirable capacity of the heating elements. Would it have been detrimental to incubation if the 475-watt machines under test had been equipped with smaller capacity heating elements? One advantage of the smaller capacity element from the electrical standpoint would be a decrease in maximum demand of the plant, and an increase in the load factor, both of which would result in a lower rate per kw-hr. In cases where all machines are in operation at the same time, as they are for a very short time when the eggs are being cooled or just after a ten or fifteen minute interruption to service, the maximum capacity of the heating elements is used for a very short period only. If the machines were using a smaller heating element, say 300 watts, the maximum demand would be 37 per cent less, and likewise all equipment could be 37 per cent smaller.

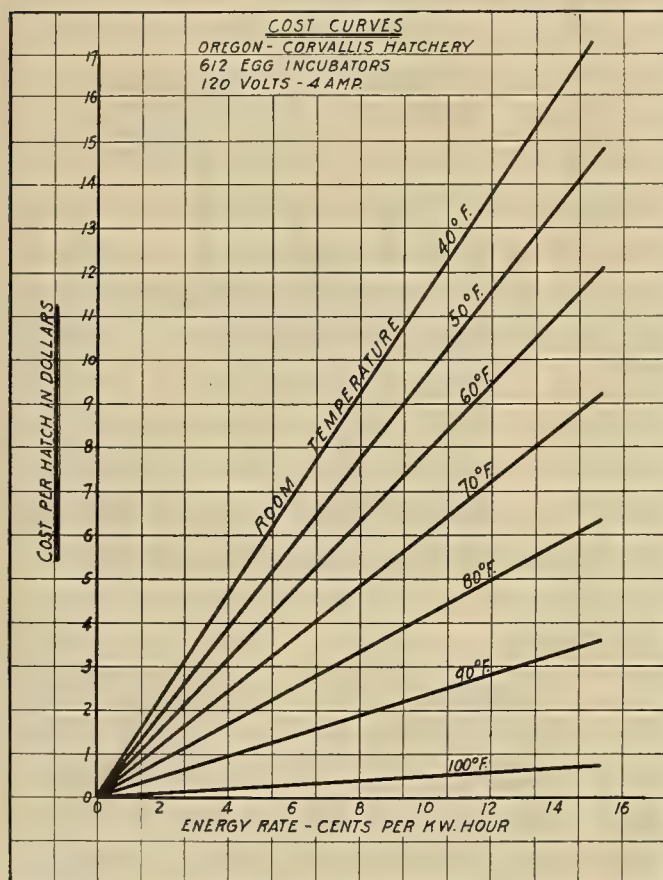


Fig. 3 showing relative costs per hatch at different temperatures and different energy rates.

delivery. Another reason for the large percentage of unfertile eggs received is the method of changing the food which is used.

In Fig. 3 is shown the cost per hatch at different rates per kw-hr., and at different room temperatures. If the temperature of the incubator room is high the amount of power used by the machines in operation is lowered. There are three factors entering into the consideration of the proper maximum temperature for the room; first, the most satisfactory temperature for cooling the eggs, second the temperature under which it is possible for men to work comfortably, and third, the temperature adapting itself to most efficient ventilation.

Some Timely Comments Concerning Electrical Advertising

By Herbert Rose

Federal Electric Company, San Diego, Calif.

THERE are many kinds of electrical advertising, and even some of the things which we are accustomed to classify otherwise, are in purpose and effect, advertising. For instance, ornamental street lights are ostensibly for the purpose of illuminating streets to facilitate vehicle and pedestrian traffic. However, their real purpose and effect is advertising. They emphasize for the stranger the thoroughfares that are most worth while to travel, namely, those that are most intensively merchandising thoroughfares. It is on these streets that he will expect to find the shops of importance that merit his patronage. They mark, in a vivid way, the territory which he may safely figure is the desirable section to consider if he is starting to investigate a location for a retail enterprise of his own. Even to the people who are at home in the town in question, they produce the same effect. They advertise the district illuminated and the establishments therein, and even more, the whole city by contrast with neighboring cities not so well provided. Thus they advertise the city, the specific district, and the merchants there.

Show window lighting does for the merchant in a district what street lighting does for the whole district. His windows attract. His establishment and merchandise, which, no matter how meritorious, would otherwise receive only part of the attention due, are favorably and forcefully brought to the attention of his prospective patrons in a measure directly proportional to the effectiveness of the illumination. The proprietor of a store closed during the evening hours understands the fact that evening window shopping is a preliminary to actual day buying. Thus, effective window lighting advertises the establishment and the district.

Flood lighting or outline lighting of a building or group of buildings constitutes other means of attracting attention for the purpose of creating more interest in an office or store building, thus advertising it to the extent of improving its rental value. These methods are also effective in drawing attention and consequent patronage to places of amusement, etc.

Carnival lighting, either on land or water, has

INCLUDED among the many benefits to be derived from actively pushing the electric sign business are increased business to the user, increased revenue to the central station, more work for the contractor and the manufacturer, higher rental value to the building owner and the general improvement in the appearance of the business section of the city itself. In this article Mr. Rose discusses all of the various phases of electrical advertising with special emphasis on electric signs.

the same advertising value, even though for a limited time only during its use.

Moving displays attract more attention than stationary ones, so we have another class of advertising in show windows or public places, in which electricity for motive power instead of illumination plays its part in advertising.

Electrical advertising signs constitute another form, and in the discussion that follows, the writer has in mind particularly elec-

trical advertising signs, for the reason that this form combines all of the features and benefits of all of the other forms of electrical advertising.

There are many kinds of electrical signs each with a field of its own. The large and elaborate displays, usually on a roof or large exposed wall, constitute a type warranted for the purpose of general publicity in localities where traffic is intense, that is, where the circulation justifies the expense involved in a large display. These signs are also appropriate in establishing, as a landmark, some extensive installation in a location of considerable traffic, or for a similar purpose, on a factory or warehouse located on a prominent vehicular, rail or water highway. The effect in such cases is to advertise by emphasis the size or caliber of the structure, and indirectly create a favorable impression of the enterprise there housed, and produce other general benefits. This class of sign, in addition to calling for specialized ability to design and construct attractive displays, also requires the engineering abilities of structural designers and extensive manufacturing facilities to produce the structures to safely harmonize with the existing structure and properly support the display.

There are also numerous types of smaller signs intended for indoor use in show windows, stores, lobbies, etc., for delivering advertising messages in a forceful manner, and for directing traffic.

As representing the installations most generally found profitable in the greatest number and variety of businesses, there is the class of sign used on building fronts and mounted at right angles to the traffic, to reach two or three blocks in each direction. Such signs must come within the limitations of local ordinances. Usually these ordinances are drawn with

the intention of insuring a reasonable distribution to all who care to derive the benefits of electrical sign advertising; also to see that the sign user contributes a reasonable amount of illumination to the streets in exchange for the franchise of using the space over the walks; and finally to provide for the safety of the public. Most progressive city officials see the wisdom of encouraging electrical advertising signs, imposing only such regulation as is necessary to accomplish the purposes mentioned before. The well established manufacturers, having reputations to maintain, are usually willing and anxious to co-operate with the city officials in the accomplishment of these results.

In the class of sign just described, there are two types: one in which the letters and characters are formed of exposed bulbs, and the other in which the source of illumination is within the sign, and the letters and characters are formed of translucent material. The former has the advantage of contributing more to the general illumination of the vicinity, while the latter is more effective in cases where there are relatively small letters.

Good Appearance Increases Value

All parties involved are interested in encouraging the use of those materials and types of construction that stand the ravages of weather, both for the purpose of maintaining the structure in good condition, and what is more important from an advertising standpoint, for the purpose of maintaining the appearance. The latter determines whether or not the sign will permanently create a favorable impression. The sign's advertising value decreases rapidly if it does not continue to create a favorable impression, and may even reach a point where it does just the opposite. One material that has been demonstrated to fill the requirement of permanently retaining its original condition is a heavy gage of steel, on which there are fused several coats of porcelain of natural color. This material retains its color and surface brilliancy permanently, against all weather conditions, consequently retaining the advertising value permanently. There are installations of this class of material in use today retaining at full advertising value the appearance they had when originally installed over twenty years ago, and that with no maintenance except an occasional washing. Most other kinds of surface finishes, depending upon paint, are effective only temporarily or require considerable maintenance which they seldom receive from the average advertiser who has no facilities or inclination toward such maintenance.

Governing the effective life of the sign, there are many other mechanical and electrical details such as the choice of the proper type of weatherproof sockets; methods of connecting same; the design and assembly of frames and structures of proper strength; the use of proper gage of metals and methods of making the seams; the methods of making electrical joints; methods of weather-proofing all the parts; methods of providing access to lamps for renewal and to surfaces requiring cleaning; and many other details known to those with the

wide experience necessary to learn all these factors and their importance.

Governing the effectiveness, from a display standpoint, experience has demonstrated the importance of such features as the choice of effective color combinations; the choice of size of characters, and the spacing thereof; the proper proportioning of message and decorative effects; the choice of system of illumination, determined by space available and amount of reading matter; size, type, and spacing of the illuminating units; method of producing moving effects; proportion and shaping of letters and characters, and the proper materials for forming them; and many other features.

So much for a brief synopsis of kinds, purposes, and features governing the effectiveness of electrical advertising. Now, as to the benefits to be derived from its use.

Benefits to the User of Electrical Advertising

The user comes first in the discussion of the benefits for the reason that he foots most of the bill and derives most of the direct benefit. No one could conscientiously urge the use of electrical advertising if it were not evident that the user benefits. It is an accepted fact that well directed advertising in general pays, and that there are practically no conspicuous successes in commercial enterprises in which advertising did not play an important part. There are many effective forms of advertising, and no one form can be said to be best for all purposes. However, there are few kinds of enterprises that can afford to overlook the benefits to be derived from electrical advertising, as exemplified by electrical signs, for instance. Let us see why they can reasonably be expected to produce the desired results.

Based upon figures obtained from traffic counts, it has been shown that the electric sign on a retail store, for example, reaches more people per year per dollar spent than does any other recognized medium. The message, although general in its nature, can be effectively supplemented by other forms of publicity, giving seasonable or timely detailed information (although even this feature may be accomplished by certain forms of signs arranged to be easily changed as to their reading matter). However, the sign has this combination of desirable features not possessed by other kinds of advertising. It reaches the prospective customer at a place where he can conveniently investigate further what the advertiser has to offer. Thus the impulse that it creates is more likely to produce the direct contact desired by the advertiser (and the consequent greater chance for an actual sale) than an impulse created at some remote place, and at some less opportune time. At the same time the sign brands into the mind of the public the advertiser's location, and helps the public find him later at some more opportune time, if not at once.

The electric sign, after being once properly designed and installed, is working continuously every hour of the year. Incidentally, besides burning its message into the subconscious minds of the passers-by, it is contributing to the illumination around the

premises, which illumination in itself has considerable advertising value. The user's frontage is automatically extended to many times the actual frontage on which he pays rent by the fact that his store location is visible for a considerable distance either way from his actual frontage. Retail dealers have stated that their electric signs on side street locations have kept them in contact with traffic on main streets where rentals are several times as great. A chain of cigar stores using interchangeable letter signs in which the message is changed at intervals alternately featuring different brands, shows by its accurate records, an increase of an average of 25 per cent on sales of the brand currently advertised as compared with sales of the same brand during a period when that brand was not advertised on the sign. The value of the advertising in that case is in the control of the demand in the desired channels, as well as the general increase in volume. Another evidence of the regard advertisers have for their signs is the wave of protest heard whenever, for purposes of conservation, it has been necessary to curtail the burning of sign current during emergencies.

The greatest benefit in direct sales comes to the merchant catering to the impulse purchase, because his sign, by the power of suggestion, creates purchase impulses that might otherwise lie dormant and in addition directs the purchase impulse thus created to his store instead of to a less conspicuous competitor, with the direct result of sales. The merchant catering to the so-called deliberate purchase may not get such quick or direct action from his sign, but the same principle applies to him in the same manner that "constant dripping wears a stone."

Many years ago the electric sign was considered only as a novelty, but the factors previously mentioned have been so thoroughly demonstrated that there has been a constantly increasing use of electric sign advertising, particularly by those classes of business that are in the habit of systematically studying the actual net profits obtained by various forms of advertising. This is perhaps the most conclusive of all the reasons mentioned to show that the user benefits.

Benefits to the Central Station

The most obvious benefit to the central station is the revenue from current consumed by the sign. That alone is a large item in the aggregate. Also, the merchant who burns a sign finds it profitable to burn more show window lights and burn them longer in view of the fact that his sign is attracting more people to the windows, warranting a more intensive use of the windows—more revenue to the central station for current consumed.

There is another benefit, not so obvious. The various forms of electrical advertising, while they are advertising merchandise and service of various kinds, are, by force of example, advertising the use of electricity.

Central stations are themselves among the most conspicuous users. They find electrical displays effective in emphasizing their plants and conspicuous properties for the purpose of reminding their customers of the extensive provisions that have been

made for supplying service, thus suggesting the increasing use of that service. Such displays are also impressive to the prospective purchasers of the securities of the utility companies.

Benefits to the Electrical Industry

Each display calls for the employment of various electrical crafts in its assembly. It provides employment of electrical crafts in the manufacturing of the basic materials such as wire, sockets, fuses, lamps, flashers, etc. It calls for the services of electrical contractors in the installation and service wiring, and corresponding use of additional electrical materials such as wire, conduit, switches, fuses, renewal lamps, etc. The benefits reach directly and indirectly through the whole electrical industry.

Benefits to the Property Owner

In the case of tenants using electrical advertising, the property owner enjoys a benefit. His structure is enhanced as to rental value, due to the added appearance of activity, and indirectly due to the increase in business resulting to his tenant, which has a real bearing upon the rental value.

For this reason, building owners have found it profitable to install, for their own account, electrical displays emphasizing their buildings even though fully occupied, as the rental values are proportional to the excess of demand for space over the supply. Obviously, it pays a building owner to have a waiting list of prospective tenants.

The Benefits to the Neighborhood

All merchants in a given neighborhood profit by the popularity of the neighborhood. The traffic which a merchant brings to his own store is an asset to his neighbors, so we find a community interest. This is particularly true of the outlying business sections. A neighborhood shopping district takes on the "down town" atmosphere when it uses the "down town" methods of attracting business, which it must do to solve the ever present problem of sharing with the down town district the patronage of the neighborhood people.

Advertising in the outlying sections is more conspicuous by reason of relatively fewer competing displays as compared to the down town district, thus smaller expenditures suffice for corresponding emphasis.

Benefits to All

All of the other benefits mentioned act in a cumulative manner to the common good. Increased business to the user, with consequent greater profit to contribute to the general prosperity; increased revenue to the central station, calling for increased dividends to its shareholders; more revenue to the electrical contractor to pass on to his employees to put into circulation; more rental value to the building owner to encourage him and others to build more buildings, with all the incidental additional money put into circulation; new settlers attracted by the live appearance of the town, by contrast with less brilliantly advertised competing towns, with the consequent added influx of new enterprise, and its chain of benefits.

The New Norwegian Electric Pig Iron Furnace

By Frank Hodson¹ and Dr. M. Sem²

WHILE Norway has been famous for centuries for the high quality and purity of its iron, it was not until 1910 that iron was produced commercially by electric smelting. The Tinfos Verk and Elefos Jernverk at that time installed simple monophase pit-type electric smelting furnaces using coke as a reducing agent and produced about 10,000 tons of pig iron a year.

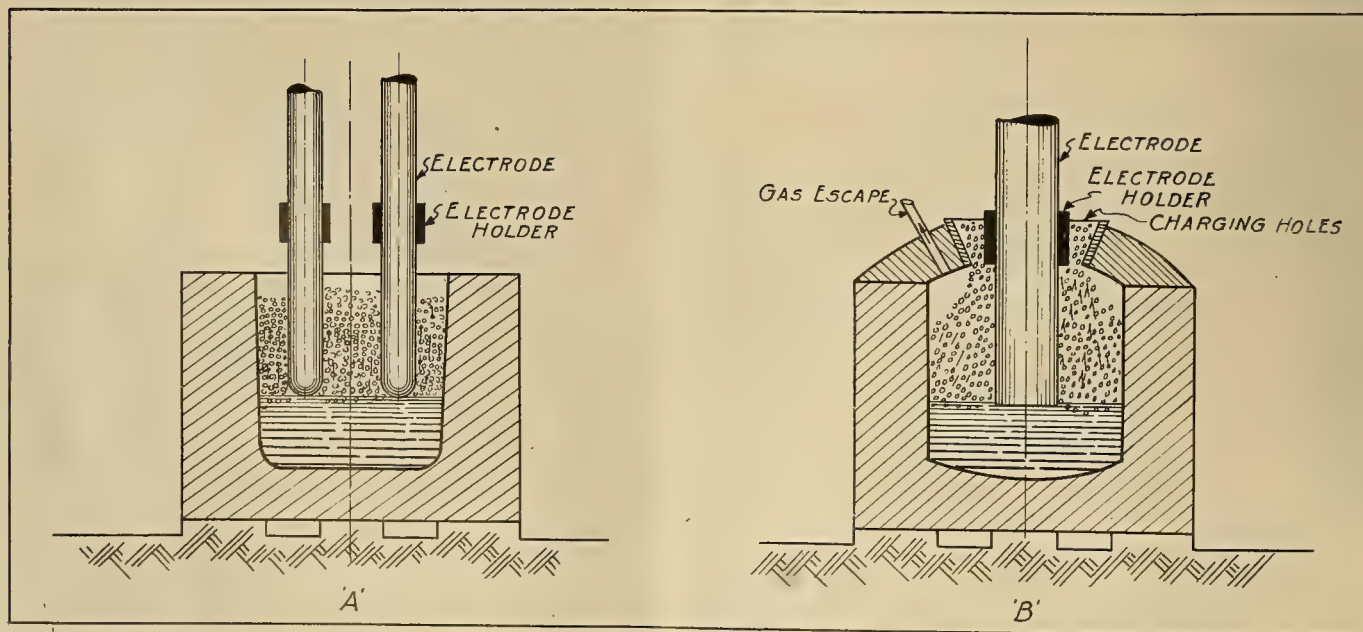
Originally these furnaces were provided with two sloping shafts, one on each side of the carbon electrode, but as these did not prove satisfactory for removing the gases generated, these were finally allowed to burn or escape. The furnaces were not efficiently operated in this way and little or no progress was made until 1920 when the Norwegian government decided to appropriate the necessary money for the running of a 600-kva. electric smelting furnace using the Soderberg self-baking electrode. This electrode consists of a metallic casing with inside fins of metal—the raw electrode mix consisting of coke, anthracite, pitch and tar being slightly heated and rammed into the metallic casing. The electrode is then ready to use. The fins, casing and the mix carry current until the electrode is baked and then the operation is continuous, new pieces of electrode being welded on from time to time. The electrodes are not limited either in size, length or shape and they are superior to ordinary carbon electrodes in electrical conductivity so that a current density as high as 11 amp. per sq. cm. (corresponding to ap-

proximately 70 amp. per sq. in.) is easily possible. The size of the furnace is not limited as with earlier monophase furnaces, single, two or three-phase furnaces being practical.

The furnace was put in operation in July, 1922, and ran continuously until Jan. 6, 1924. The report on its operation has caused wide comment in Norwegian iron circles and while electric smelting of iron ore may not compete with blast furnace iron in the United States, the results are sufficiently interesting from the standpoint of a new development to merit consideration. There are places in the United States, including the Pacific Coast states, in Canada and in South America rich in cheap hydroelectric power where coal and coke are expensive and ore plentiful, that are watching the Norwegian experiment with considerable interest. The plant of the Campanhia Electro-Metallurgica Brasileira already has two large electric smelting furnaces in operation and it is estimated that over 120,000 kw. of electric smelting iron furnaces are in operation in various parts of the world.

During the test all kinds of ore were used, including concentrates, sinters and lumpy ore. In some cases the content of concentrates was as high as 66 per cent without causing special difficulty. Both charcoal and coke were used as a reducing agent—the former working so smoothly that coke and coke breeze were used most of the time in order to make the operating conditions as difficult as possible. During the test 1,300 tons of pig iron were produced, one-third being sold to foundries and the balance to

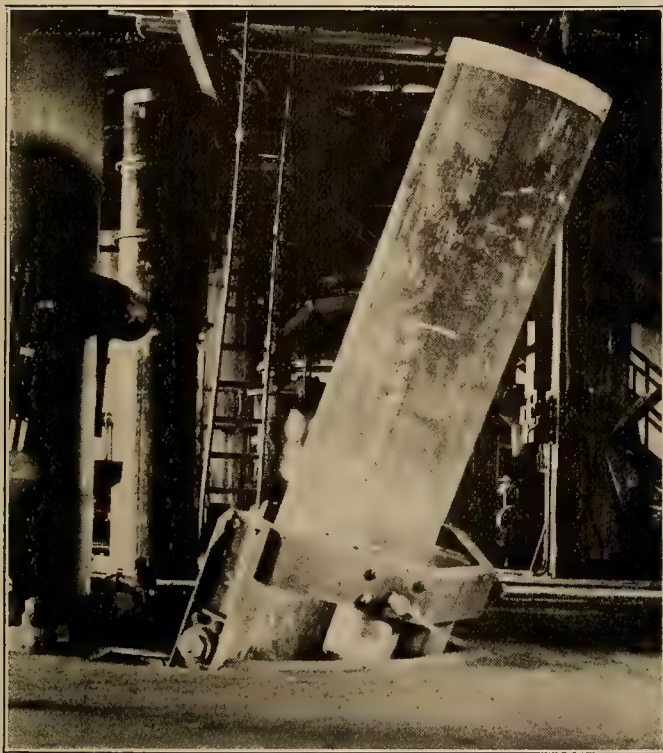
¹President, Electric Furnace Construction Company, Philadelphia, Pa.
²Metallurgist, Elektrokemisk Industri, Kristiania, Norway.



Two types of furnace used during tests. "A" shows operation as an open furnace and "B" as closed furnace with vents for removing gases.

a steel plant for use in open hearth furnaces. Both gray and white iron were produced at will.

The furnace used was a pit type with electrodes hanging vertically into the furnace crater. The run



A 26-in. Soderberg electrode in a 4,000-kw. electric pig iron furnace in Norway.

was divided into three periods. During the first the furnace was operated as an open-pit type with one top and one bottom electrode. During the second the electrodes were both on top. For the third and most successful test the furnace was closed with a brick roof, provided with a charging shaft around the



Two 3,000-kw. "Electrometall" type electric iron ore smelting furnaces now operating in Brazil.

electrode and equipped with pipes for collecting the gases. During all of the tests the electrodes were charged with 11 amp. per sq. cm.

The consumption of power, coke and electrode varied with the different kinds of coke and coke

breeze and also with the grade and kind of iron made. A fairly good grade of ore gave the following results:

For each ton of pig iron produced

2,600 kw-hr. were used

380 kg. of 85% carbon coke were used

8 to 10 kg. of electrode were used

A summary of the advantages of the new furnace over the older types as brought out by the tests showed:

1. Cheaper operation—two workmen ran the trial furnace.
2. Cheaper and simpler installation—a 10,000-kw. furnace requires but three electrodes.
3. Any raw materials may be used (powdery ore, iron sands, coke breeze, etc.).
4. Load of the furnace can be varied as and when required.
5. Can use either charcoal or coke economically.
6. Operation of the electrode continuous—no breakage, greater power input into furnace, increased production, much cheaper than carbon electrode.

The first result of the experiment has been the construction of a 4,000-kw., three-phase furnace of this type for the Christiania Spigeverk, Kristiania, Norway. The results of this installation will be watched with a great deal of interest.

Japanese Government Will Electrify Tokaido Railway Line

AT a recent Japanese Imperial Government railway conference held in Tokyo a program was approved for the electrification of the Tokaido railway line between Tokyo and Akashi, according to advices sent to the United States Department of Commerce by Assistant Trade Commissioner Phillips. The money for electrification work was appropriated some time ago and the recent conference had for consideration only the development of a definite program.

The work under consideration at the present time consists of the portion of the Tokaido line extending from Numazu to Akashi, a distance of approximately 300 miles. This work, not including the cost of locomotives, is estimated to require the expenditure of about 21,983,000 yen (approximately \$10,700,000).

In addition to the electrification of the Tokaido line, the Japanese railway department has already prepared tentative plans for electrifying both the central and the northern lines.

While the foreign electric locomotives have so far dominated the field, at least one Japanese company is active in competing for this particular class of business. A trial locomotive has recently been completed and tested by the Hidachi Engineering Works, which in design embodies many features introduced by American manufacturers. According to reports, this Japanese trial locomotive has given good results in the recent test.

All services, feeders, sub-feeders and motor and other special circuits should be listed on a form such as shown in Fig. 13 and by checking the riser diagram against the items found on the floor plans and listed in the form there is less chance of error.

the past articles in the Journal of Electricity. It is also assumed that the feeders and sub-feeders are run in separate conduits as some departments of electricity do not permit them being run together due to the fact that in these cities two or more power

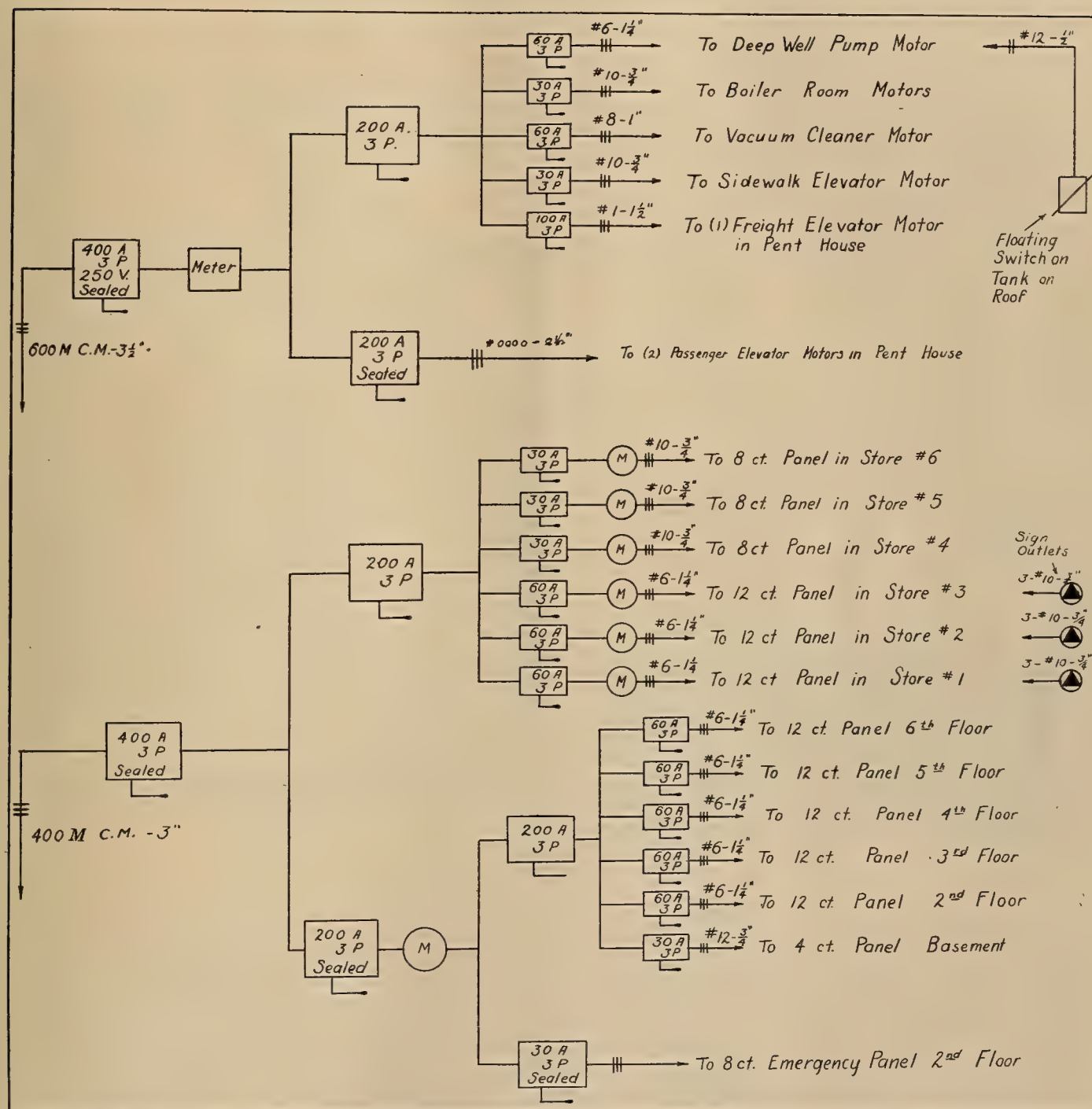


Fig. 12

In totaling the wire length for each separate run 5 ft. should be added to the conduit length in order to take care of connections in cabinets, switches and the incidental waste.

In this form it is contemplated that the material items are listed separately instead of consolidated as shown in the discussion of this subject in several of

companies often serve the same building and if at a later date a tenant should change to the other company it would mean that the conductors for two separate systems would be in the same conduit and therefore in conflict with Rule 26-P, last paragraph of the 1920 National Electric Code, and Rule 503-J of the 1923 Code.

A Practical System of Accounting for Contractor and Dealer

By F. V. Mitchell

IN the July 15 issue of the Journal of Electricity an illustration of the detailed job cost sheet was presented and it is now the intention to outline the exact method of procedure in the preparation of this analytical form.

The descriptive data at the top of the sheet, such as Nature of Work to Be Done, Date, Job No.,

marked "Credit" is used by the stock clerk to list materials returned from the job, which are entered on the Job Cost Sheet as a deduction from the ma-

DAILY TIME CARD

JOB No 485 DATE May 22, 1924

NAME J. R. Williams Location 1405 Ohio St.

DESCRIPTION OF WORK

Running Conduit

HARKMAN H. Brown

TIME STARTED		TIME FINISHED		HRS	MIN
A.M.	P.M.	A.M.	P.M.		
8			✓	8	

TIME CARD MUST BE
TURNED INTO OFFICE DAILY

Fig. 1.

Location of Job, Owner, Builder, etc., are obtained from the information contained in the usual form of contract, which is filed in a proper folder provided for that purpose and given the next job number in the order following. The workman's name and number of hours worked are filled in from Daily Time Cards (Fig. 1) turned in by the workmen. The number of hours worked are also entered from the Daily Time Cards opposite the proper workman's name on

LIST OF LABOR AND MATERIAL

FILED INTO JOB DURING MONTH OF

MAY, 1924

DEPT No 1 - WIRE & CABLE					DEPT No 2 - FURNACE				
Job No.	LABOR	MATERIAL	TOTAL	Assigned	Job No.	LABOR	MATERIAL	TOTAL	Overhead
485	25.00	69.00	94.00	33.50	485F	92.00	22.00	322.00	246.50
486	30.00	15.00	45.00	29.50	486F	10.00	18.00	28.00	21.00
487	16.00	26.00	42.00	16.50	487F	5.00	9.00	14.00	10.50
488	18.00	49.00	67.00	22.40	488F	6.00	16.00	22.00	18.50
489	20.00	33.00	53.00	18.50	489F	3.00	10.00	13.00	10.50
490	49.00	77.00	126.00	44.10	490F	16.00	26.00	42.00	31.50
491	15.00	62.00	77.00	34.30	491F	10.00	20.00	30.00	24.00
492	15.00	16.00	31.00	10.50	492F	5.00	5.00	10.00	7.50
493	89.00	156.00	245.00	85.50	493F	30.00	50.00	80.00	60.50
494	15.00	5.00	20.00	30.20	494F	12.00	18.00	30.00	24.50
495	5.00	102.00	107.00	52.90	495F	17.00	34.00	51.00	38.50
496	21.00	37.00	58.00	23.50	496F	10.00	15.00	25.00	19.50
497	25.00	72.00	97.00	25.90	497F	7.00	17.00	24.00	18.00
498	30.00	85.00	115.00	39.20	498F	10.00	27.00	37.00	27.50
499	15.00	84.00	99.00	40.70	499F	12.00	25.00	37.00	28.00
500	29.00	75.00	104.00	36.40	500F	10.00	24.00	34.00	25.50
501	41.00	89.00	130.00	44.50	501F	16.00	29.00	45.00	34.50
502	65.00	125.00	190.00	68.50	502F	21.00	44.00	65.00	48.50
503	5.00	86.00	91.00	47.90	503F	17.00	28.00	45.00	33.50
504	40.00	91.00	131.00	46.50	504F	13.00	31.00	44.00	33.00
TOTAL	981.00	2619.00	3600.00	1064.00	TOTAL	328.00	676.00	1004.00	753.00

Fig. 4.

PAY ROLL FOR WEEK ENDING May 27, 1924

NAME	DEPT.	S	M	T	W	T	F	S	OVER-TIME	TOTAL TIME	RATE	PER	AMOUNT EARNED	Y	DEPT. TOTAL	DEDUCTIONS		NET AMOUNT PAID	CHECK NO.
																ITEMS	AMOUNT		
H. Brown	1	8	8	8	8	8	8	4		44.00	1.25	hr	55.00					55.00	100
J. Adams	1	8	8	8	8	8	8	4		44.00	.75	"	33.00			cash adv.	5.00	28.00	101
R. Jones	1	8	8	8	8	8	8	4		44.00	.50	"	22.00		110.00			22.00	102
C. Davis	2	8	8	8	8	8	8	4		44.00	1.00	"	44.00			"	5.00	39.00	103
E. Smith	2	8	8	8	8	8	8	4		44.00	.75	"	33.00					33.00	104
S. Williams	2	8	8	8	8	8	8	4		44.00	.50	"	22.00		99.00			22.00	105
													209.00		209.00		10.00	199.00	

Fig. 2.

the Weekly Pay Roll Record, as shown in Fig. 2. The amount of materials used is entered from Material Requisitions (Fig. 3) prepared by the estimator at the time of delivery to the job. A similar form

materials sent to the job, the difference representing the net amount of material used to complete the job.

The Job Cost Sheets are filed numerically in a canvas-covered binder provided for that purpose and

at the end of each month the total amount of labor and material put into each job during the month as shown on the job cost sheets is entered on the List of Labor and Material put into jobs during the month (Fig. 4). Through a monthly journal entry the total of the material column is debited to Work in Process account, No. 15, and credited to Merchandise account No. 10, and the total of the Labor column is debited to Work in Process account No. 15 and credited to Accrued Pay Roll account No. 32.

charged to each department is ascertained by the preparation of a summary of the amounts allocated to Wiring (1), Fixtures (2), and Store (3) on the various Expense accounts No. 60 to 73 inclusive, in the General Ledger. The totals of Departments Nos. 1 and 2 should be debited to Work in Process account No. 15, the total of Department No. 3 debited to Cost of Goods Sold (Overhead) account No. 52-C, and the grand total of all three departments credited to Overhead Expense Clearing account

Job No. 485

REQUISITION

No. 1425

DATE July 11th 1924

Track Clerk: Please deliver the following material.

To J. R. Williams

Approved: H. H. Olson Jr.

AN ORDER OF Henderson Estimator

Section	Qty	Quantity	No	Dept	Articles	Price	Amount
G	142	2000 ft	14	1	SB Sided wire	6.30 M	12.60
"	142	1000 "	14		do do	9.75 M	9.75
"	126	2000 "	15		RC Sided wire	3.30 M	6.60
"	127	500 "	1/2"		Loom	20.30 M	10.15
H	1	1/2"	1/2"		Wood Screws	19.00	19
"	2	1"	1/2"		do	26	26
G	41	200	1/2"		Loom Fasteners	9.45 M	1.89
"	54	✓	1/2"		Industrial Bushings	2.53 C	1.44
"	55	20	3/4"		do	2.62 C	.52
"	72	10			Plug Cables	15.95 C	1.60
K	20	20			Style Boxes	8.90 C	1.78
							45.00

Entered Joe Green H.S.

Fig. 3.

As Accrued Pay Roll account No. 32 is debited with the amount of checks drawn and paid for labor during the month, the credit balance of this account represents the amount of labor earned but not paid at the end of each month. This amount should always equal the total of the previous month's pay roll included in the first weekly pay roll checks of the following month. It is very essential that this be verified each month as it proves that all labor paid is being charged properly against the job. It is important that this be done accurately on contract jobs for cost statistical purposes, for if any labor is omitted from time and material jobs it simply means that labor is being paid, for which no returns are received.

The total overhead expense for the month

group 60 to 73. This in effect closes out the Overhead Expense accounts monthly and they are not taken into consideration in the General Ledger Trial Balance. The totals of overhead expense charged to Departments Nos. 1 and 2 for the month, are then divided by the totals of labor and material put into jobs during the month in each respective department, the average percentage obtained in Fig. 4 being 35 per cent for Department No. 1 and 75 per cent for Department No. 2. The total of labor and material put into each job is then multiplied by this common percentage and the amount of overhead on each job for that month is extended in the overhead column, the total of which should agree with the total overhead expense charged against the two departments for the month.

Some Reasons Why Main Fuses Should Be Sealed

High Conductor Capacity and Scientific Fuse Protection Are Often Rendered Ineffective by Fuse Tampering

By BENJAMIN W. CLARK

Chief Inspector, Department of Electrical Inspection, Detroit, Mich.

What the safety valve is to a steam boiler, the fuse is to an electrical circuit. When a boiler is overloaded, the safety valve lets go or else the boiler lets go. When an electric circuit is overloaded the fuse blows out—and if there is no fuse, serious consequences may follow. Is it not strange that the electrical industry, the Underwriters' Laboratories and municipal inspection departments, having gone to so much trouble and expense to make the use of electricity safe, are in so many cases willing to let their efforts go for nothing by permitting users to tamper with the safety valve of the installation—the fuse.

Rarely do people monkey with the safety valve on a boiler, or overload it with weights, yet it is an everyday occurrence for them to tamper with fuses.

An electrical inspector a few years ago visited a neighborhood motion picture theater on one of his regular inspection trips. Overhead sat several hundred persons watching the picture. Below, in the complete wiring of the entire building, he found scarcely a fuse that was not backed by a coin. In all, he took from that installation forty-one cents in money—pennies, dimes and nickels. Fuses had been so fixed that they would carry more load than the line itself, and an overloaded circuit beyond question would have produced a fire, and beyond reasonable doubt a panic.

Why all this fuss about using a certain size of conductor, covered by a certain thickness of rubber? Why require porcelain knobs and tubes, or iron conduits to carry the conductors? Why the expense of testing electrical devices in the Underwriters' Laboratories? Why the trouble and expenditure of inspecting the finished installation? Of what use is a certificate of inspection when five minutes after it is issued the user may, wilfully or ignorantly, make all of these precautions worthless by doctoring the fuses? Such offenses do not come under the criminal code in the ordinary sense. To tamper with a fuse is punishable, it is true, as a violation of the electrical code, but the practice cannot be reached through that channel. In flagrant cases fines have been imposed—even jail sentences been given—but this is not the way to prevent the common doctoring of fuses by people who simply wish to avoid the trouble and expense of replacing them when they are blown out.

The extent to which fuses are tampered with, in both household and commercial installations, is amazing. The trouble to which janitors and engineers will go to short-circuit a line through a fuse, simply to avoid the trouble of replacing it, is surprising. In a Detroit hotel recently there were found twenty-two brass fuses that had been bypassed by cutting away part of the base and turning it over, thus short-circuiting the fuse. In another part of the same installation were found three pieces of No. 8 copper wire that had been used

to replace blown fuses. The inspector in this case just happened to drop into the hotel. Picture what the result might have been if these lines had become overloaded and a fire had resulted in the middle of the night in the hotel, which, by the way, was of wood and a veritable fire trap.

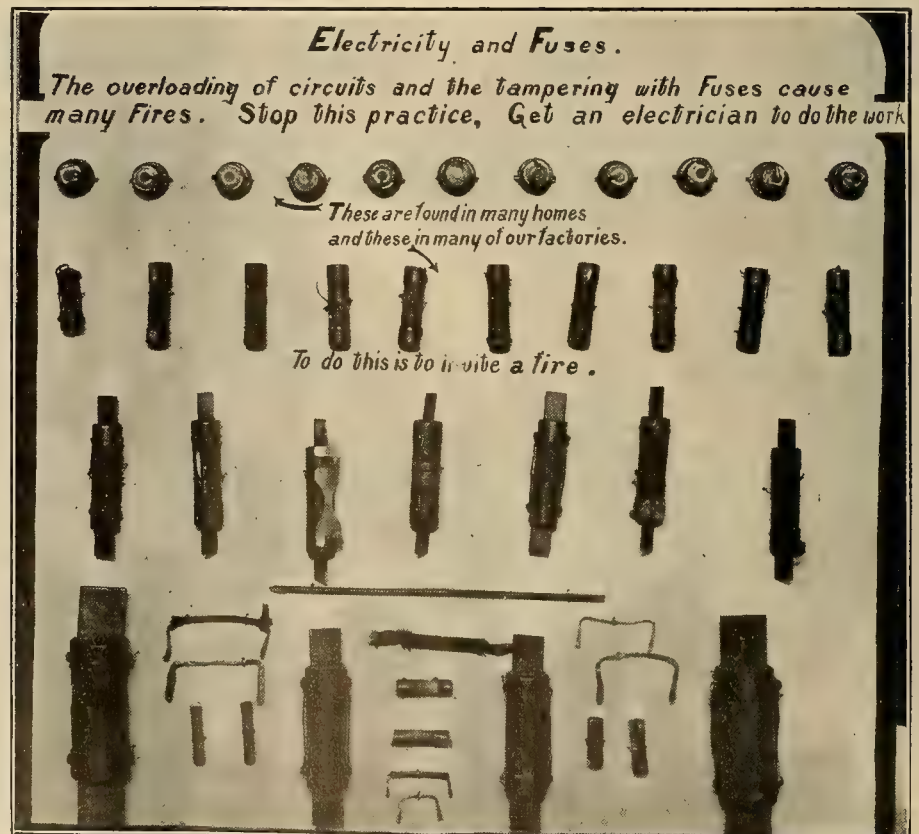
Here is not only a fire hazard but a life hazard that at present can be avoided only by finding out and correcting such conditions. It is not to be expected that people can be fully educated to the dangers of this practice nor can it be expected that ordinances can be universally passed which will prevent tampering with fuses because of the penalty involved. There is only one answer—to seal effectively the main fuses in every electrical installation.

It is very difficult to say just what percentage of fires are caused by such tampering with fuses. The reason is obvious—the fire destroys the evidence. From the number of such cases that are found, however, and from the danger of fire that such a condition produces, it is certain that a great deal of property damage is resulting every day from this cause. Fires that start from electrical defects are mainly attributable to two conditions—either the looping or kinking of wire, or the doctoring of fuses. Several years ago the writer sat in a hall over a big furniture store in a wooden business block. The

manager sat at his desk and pointed to the wire of his electric light which was looped and coiled all over the place. He remarked that he had heard that this was dangerous and might cause a fire. He asked if this were true. Just as he had been told that it was, the wire strangely enough started to smoulder and burst into flames—an unusual coincidence, but a dramatic one, and one that emphasizes the danger of careless wiring and imperfect fuse protection.

Fuses are placed in a circuit for a very good reason—to guard against overloading the conductors, and against short-circuits. When fuses of the proper size continually blow out it is not the fuse that is wrong. When this happens an investigation by a competent electrician should be made. To permit the user to replace these blown fuses with copper bars, wire, nails or pennies is to permit the creation of a serious life and fire hazard. There is no question about the danger of this practice. Every day inspectors from inspection departments and from the fire marshals' offices turn up such installations, and a guess could not be ventured as to how many serious fires have been averted by such discoveries.

In a restaurant in Detroit there was not a single fuse in the installation. In place of the main fuses they had used copper tubing, flattened at the ends to fit the fuse jaws of the switch. This copper tubing has many times the carrying capacity of the conductors. Every branch fuse had been doctor'd as shown in the illustration. Needless to say, every circuit was overloaded. A report from the fire marshal's office on a large garage shows the same condition existing. Every circuit is over-



Some examples of coppered and otherwise bypassed fuses found by the electrical inspection department of Detroit, Mich. Many of these fuses had been so wired that they had a greater capacity than the conductors they were supposed to protect.



A collection of fuses, many of which were found in hotels, restaurants and garages, and all of which have been blown and later rewired with non-fusible elements. Particularly interesting is the large piece of copper tubing bent to fuse form and taken from a restaurant.

loaded and every fuse doctored. One instance after another could be cited in which similar conditions have been found, but everyone who has had anything to do with electrical inspection departments has had plenty of personal experience of this nature.

What can be done about it? Is it necessary to stand by and let such an evil go on? Do we have to go along, cheerfully replacing doctored fuses as we find them, and trusting to Providence that those we do not find will cause no trouble?

There is but one solution to the problem—put the main fuses under seal. We would not think of permitting a user of electricity to wire his building with bare wire. We certainly would object to his using No. 18 or No. 20 wire in his main and branch circuits. Why, then, let him create almost the same hazard by making it so easy to doctor the main fuses? The plain answer, and the only way out, is to put the main fuses where the user cannot reach them, for if he can he will doctor them, in a large percentage of cases, as soon as they blow out. It is almost unbelievable that, with a full knowledge of the importance of proper fuse protection, so many inspection departments which have given a good deal of attention to the protection of open switches have yet taken no step to eliminate this doctored fuse hazard.

Attractive Fan Window Produces Excellent Results

A seasonable window display of the Electrical Supply Company, Sacramento, Calif., productive of fan sales, is shown in the accompanying picture. The trim, which was supplied by the Westinghouse Electric & Manufacturing Company, features Westinghouse fans, and the material was arranged by F. A. Sieke. The opposite arms of the traffic signal read "Keep Cool," and this signal was revolved by means of a fan blowing on the arms. C. V. Schneider, manager of the company, voiced his approval of the window, stating that the thirty-five fans sold during the two weeks of the display proved its effec-

tiveness. This was considered an excellent showing, considering the fact that the fan season is yet early, and that the weather was cool for a portion of the time.

Alameda County Association Has Monthly Dinner Meeting

The regular monthly meeting of the Electrical Contractors' and Dealers' Association of Alameda County was held at the Newport Cafe, Oakland, Calif., on July 8. The meeting was well attended by members and guests from all over the county.

The dinner, preceding the business meeting, was at six-thirty. Following dinner Mr. Chilcote, as presiding officer, called on several of the guests for brief addresses. Ben Hill, of the electrical inspection department of the city of Oakland, told in brief of the new ordinance just passed in that city and of its benefits to owners of buildings as well as to electrical contractors. Walter Aden, Oakland manager for Fobes Supply Company, San Francisco, spoke briefly on the folly of the low bid and on the necessity for charging a price

for work sufficient to yield a legitimate profit. Lloyd Hanlon, of Electric Supply Company, Oakland, spoke on improving conditions and "Tommie" Thompson of the Western Electric Company, San Francisco, told of his company's interest in dealers' associations. L. E. Crandall, of the California Electrical Cooperative Campaign, gave a brief resumé of the June Bride Week campaign and F. V. Mitchell, accountant, spoke on the fundamentals of accounting, giving some questions and answers that had come up in the course of his contact with contractor-dealers.

J. W. Wrenn, range sales manager of the Great Western Power Company, San Francisco, spoke on the merchandise sales policies of central stations and also on the electrification of the home. Mr. Wrenn was followed by Horace Davis, editor of *The Home, Electra, Fruit and Garden*, who told of the interest of his publication in matters electrical. A. D. ("Dent") Slaughter, manager of Allied Industries, Inc., San Francisco, was the principal speaker of the evening.

Accounting Problem Questions Answered by Expert

The Journal of Electricity has made arrangements with F. V. Mitchell, public accountant of San Francisco, to answer, in these columns, such questions as may be asked on accounting. All readers are invited to forward their inquiries to The Editors, Journal of Electricity. The answers will be published as soon as possible following the receipt of the inquiry.

Question:

Can electrical fixtures be sold at less than double the material and labor costs, and result in a net profit to the contractor-dealer?

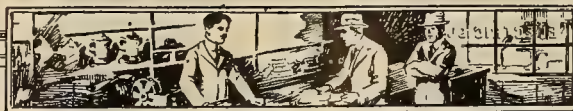
Answer:

Electrical fixtures can hardly be sold profitably at less than double the material and labor costs hung up on the customer's wall, when it is taken into consideration that the overhead of fixture departments runs as high as 75 per cent to the material and labor costs.



Fan display of the Electrical Supply Company

JOBBER, DEALER AND SALES AGENT



Getting Better Displays in the District Offices

Pacific Power & Light Company Directs Advertising and Window Dressing Activities from Central Office

Decorating show windows by mail is an innovation that the sales department of the Pacific Power & Light Company of Portland, Ore., has put into effect and has been conducting for over a year. The original trial of the idea brought forth such satisfactory results that no thought has been given to abandoning the policy.

The Pacific Power & Light Company, in common with other central stations engaged in the merchandising of electrical appliances, found that a concentration on one sales campaign was the most satisfactory means of developing sales. For this reason the company was anxious to have each of its district offices feature the same appliances simultaneously in order that a unified appeal might be made to the public. In addition to increasing the sales of the appliances, it was determined that the unit cost per sale was reduced where a larger number of outlets could make use of the same advertising and general merchandising methods.

In regard to developing normal business, it was the opinion of the merchandising department of the company, that more attractive window displays, in each of the district offices, would add considerably to the volume of business that each office would conduct. The problem that confronted the company was how to make these window displays of the most attractive nature and at the same time hold down the expense. The aim was to present displays equal to those designed by expert window dressers at a cost that would be consistent with the returns that could be secured. The company was also anxious to present advertising material that would tie in with the window displays of the various district stores.

Investigation showed that the most advantageous way to handle the advertising would be to have one central office prepare all of the copy for the various districts, the copy to be sent to the district managers for insertion in the local newspapers. It was immediately seen that if all of the districts were to secure their advertising from the Portland office, it would not be advisable to leave the district managers with the problem of preparing their own individual window displays to tie in with the newspaper advertising. One of two solutions remained for the merchandising department—either an expert window dresser would have to be employed to dress all of the windows or some scheme would have to be devised whereby the trimming of the windows could be directed from the head office.

V. H. Moon, appliance sales superintendent of the Pacific Power & Light Company, rejected the idea of having one or more window decorators trim the windows of the district offices, on the ground that the plan was neither practical nor economical. Mr. Moon also decided that the best results could not be secured by counting on the individual office forces to decorate their own windows without advice from the head office.

Some plan, by which the decorating of the district office display windows could be directed from the head office, was necessary and a number of propositions were taken under consideration. In the end a plan presented by Mr. Moon was accepted and put into practice. The plan that was adopted provided in general that suitable window trims should be made up in the Portland office of the company and then pictures of these windows should be sent to the district offices in the towns that the Pacific Power & Light Company serves.

The new plan called for standardized window trims in all of the district windows, the model display to be made up in the Portland office. It was decided that with the assistance of an experienced decorator, attractive window trims could be prepared in the head office, using a standardized set of trimming materials. For this reason it was necessary that all of the trims be simple in their nature. Before the plan was put into effect each district office was supplied with a sufficient quantity of velour, window fixtures, and decorative material to adequately form a background for any display that might be placed in the window. As nearly every one of the stores had a display window of different size, the amount of material sent to each was determined by the window area.

Soon after the district offices had been supplied with the material for decorating their windows, the first standardized window trim was prepared. Because of the varying size of the display windows, it was necessary to consider them as three general types of windows and to fit the trims into these three types. A dummy window, which could be made to correspond to the three types that were to be considered as representing the average sizes of the district windows, was set up in the Portland office of the Pacific Power & Light Company. The advertising program that had been prepared was then consulted and an expert window dresser was employed to decorate the sample

window. Using material identical to that sent to the district offices, the trimmer decorated the windows to directly tie in with the advertising that was scheduled for the next week. The display was set up in each of the three type windows and pictures were taken of each display.

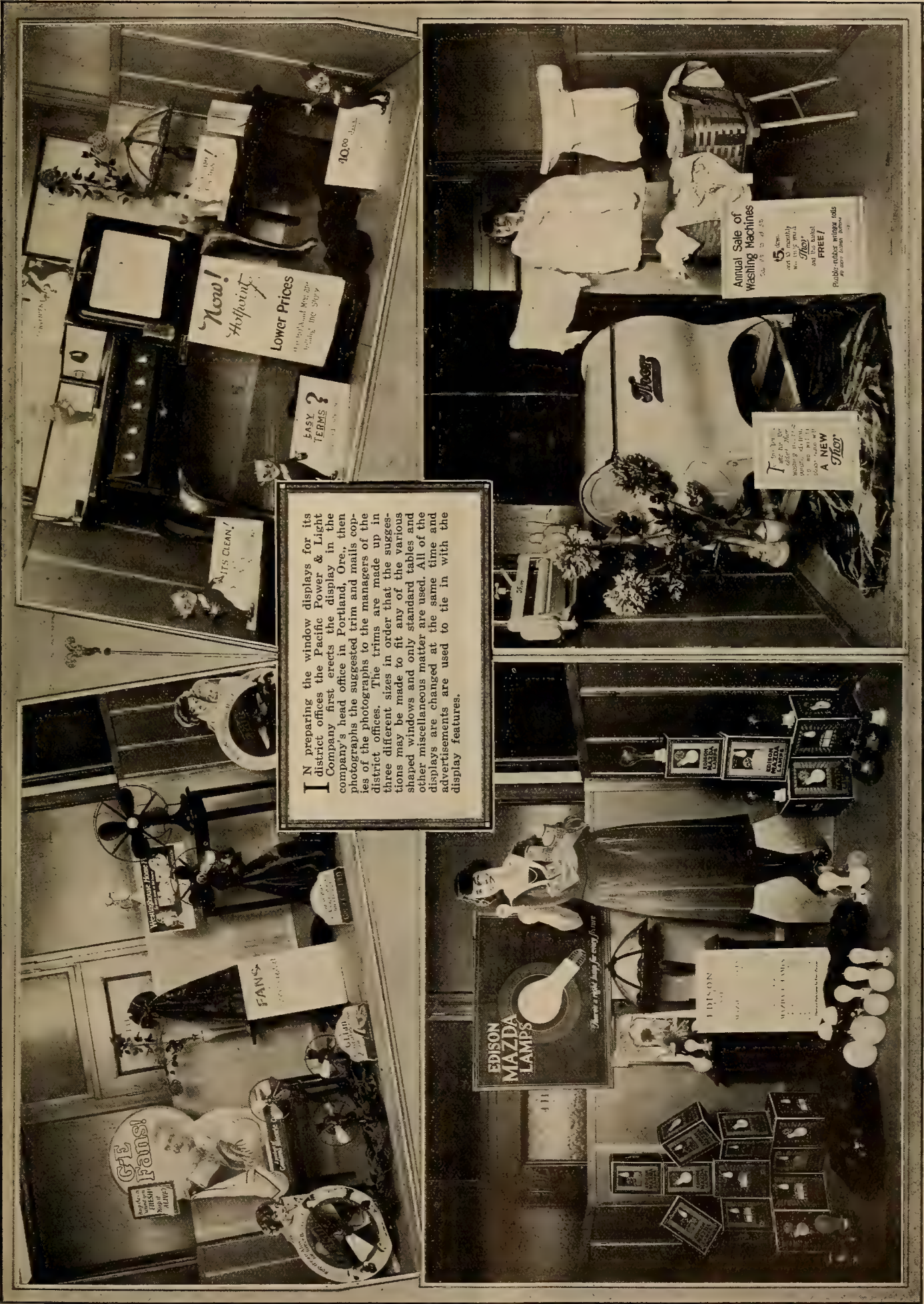
Following the actual decorating of the window, the decorator prepared written instructions to be sent along with the photographs and cards used in the display. A full set of cards was prepared for each district office and these, together with the instructions and the pictures of the trim, were mailed to the outlying offices. To prevent any of the window cards from becoming damaged in transit a special pasteboard carton was devised which could be used many times.

On receipt of the material for dressing the windows, employees in the district offices followed the written instructions and trimmed the window to make it appear the same as the photograph did. As soon as the second standardized display arrived, the first was removed from the window and all cards that accompanied the first display were returned to the Portland office of the company, the second display taking the place of the first.

As the standardized window displays have been designed to tie in with the central station company's advertising for a certain period, it is necessary that the new trim reach the district offices in sufficient time to permit all of them to change displays on the same day.

The fifteen district offices in the cities where the Pacific Power & Light Company furnishes electric service have found the window trimming service to be of considerable help to them and customers of the company have commented on the improved appearance of the display windows. On the whole the plan has worked out well and according to Mr. Moon it is contemplated that it will be followed indefinitely.

The cost of supplying the service to the districts has been brought down to a minimum through the use of manufacturers' cards, cartons and display materials wherever possible. This use of manufacturers' material has also brought additional results because of the tie-in with national advertising campaigns. During the time that the standardized window trimming service has been in use the cost of the service has been found to be less than \$10 per month per district. The reason for the low cost per month is also partly attributable to the fact that background material, such as velour, pedestals, benches, vases and flowers, are used over and over again, the variety of the display being made in the arrangement of the component parts.



Washington Utility Sells 406 Ranges in Six Weeks

As a Result of an Intensive Sales Campaign 17 Per Cent of Residential Consumers Are Cooking Electrically

When 11 per cent of the residential consumers in a large city are using electric ranges and water heaters, the question is "How many more can be sold?" This is the problem that confronted The Washington Water Power Company. Last year the company sold 1,048 ranges and water heaters on its system in Spokane and in 53 towns in the Inland Empire. The total number in service was about 5,000 or nearly 15 per cent of all the residential consumers served by the company, and in some of the towns the range users constituted as high as 33 per cent of the number of consumers. Last year out of the total of 1,048 ranges and water heaters actually sold, 75 per cent of the sales was made in two campaigns held during the spring and summer.

Business in Spokane, so far in 1924, has shown some improvement as compared with 1923, but in many of the towns conditions were not so good. In a general way, it seemed reasonable that any campaign held at this time would not be nearly so effective as those held in 1923.

However, a campaign on Westinghouse automatic electric ranges was planned and with only a very small amount of introductory advertising, it was launched on April 1, with the intention of running until May 17. Lewis A. Lewis, sales manager, R. B. McEl-

weather, holidays and other matters that affect prospective purchasers. The big question in the Spokane campaign was "How many can be sold?" and the success of the campaign hinged upon the solution, as orders for the proper number had to be placed in advance. The three men made a close estimate and accurately gaged the needs of the public.

The advertising in Spokane was placed with three local newspapers and during the seven weeks of the campaign, 2,151 in. were used with thirty-one insertions. The advertising in the smaller towns was handled by thirty-seven newspapers, with an average of one insertion per week, with sixteen to twenty inches for each insertion. An attractive insert was mailed with every residential bill sent out during the campaign and in Spokane several illuminated signs were installed upon principal car lines, showing the Westinghouse range with the legend "My Cook is a Clock." This sign also pictured the badge of the campaign, a pennant marked "\$7.50 Down."

As a special inducement, a four-piece Cloverleaf cooking set was offered free with each range and the price quoted included range, water heater and complete installation. How successful the company was is shown by the fact that 406 ranges and water heaters were sold during the seven weeks. The detailed

The record made last year during a similar sale places this department squarely up against a goal that can be crossed by 100 per cent team work. This means cooperation among the men on the firing line, in the store and by the company.

You recall there are four parts to a sale:

ATTENTION
INTEREST
DESIRE
POSSESSION

The company has authorized the expenditure of a substantial sum for advertising which will go a long way toward attracting the ATTENTION and creating the INTEREST of many prospects. Your work will be to so prepare yourself that you will be able to stimulate their DESIRE to the point of POSSESSION. It's a 50-50 game, boys, so let's play it together and according to rules.

The money spent for advertising is for your benefit—to multiply your prospects; to eliminate sales resistance; to place you above any competition; to increase the proportion of sales to calls and to insure you a welcome by every woman who appreciates the greatest household labor-saver.

Every man has been assigned a man's size job to do and when he performs his duty, the company has authorized us to pay him for the extra time and effort required.

BONUSES AND PRIZES FOR SALESMEN

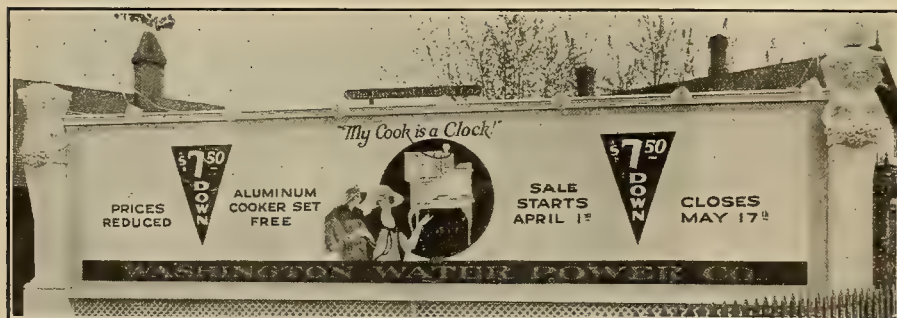
\$50.00 for each salesman who makes quota.

\$1.00 per range sold by salesman to be put in a pot and distributed weekly to the three salesmen who sell the most ranges that week. Distribution in the proportion of 3-2-1.

GRAND PRIZE of \$30.00 to the salesman who sells the most ranges during the campaign. Second high salesman, \$20.00.

Remember that real salesmanship starts when the customer says, "NOT INTERESTED."

Every one of the city salesmen made his quota, J. R. Weideman selling a total of forty ranges and winning first prize for the campaign and Carl Hoffman took second prize with the sale of thirty-five ranges. These two salesmen received also a substantial share of the weekly prizes. In addition to the prizes the salesmen received the usual 10 per cent commission on all range sales.



Attractive billboards of this character were used to call attention to the advantages of buying immediately.

	Spokane	Towns Directly Served	Total
*Population.....	115,000	55,000	170,000
Residential consumers.....	24,700	7,500	32,200
Westinghouse 3-19B ranges.....	231	111	342
Westinghouse 2-19B ranges.....	18	17	35
Westinghouse 5-15 ranges.....		2	2
Other makes.....	10	17	27
Total sales, new ranges.....	259	147	406
Gross sales value.....			\$92,862.25
Annual revenue @ \$90.00.....			36,540.00
Total in service.....	3,207	2,279	5,486
Percentage of residential consumers.....	13	30.2	17

roy, assistant sales manager, and J. F. Farquhar, general agent, planned the campaign and in so doing they realized that to make the sale effective, ranges must be installed promptly and consequently an ample stock must be available at all times. Experience has shown that the rate of sales per week during a campaign may fluctuate through wide limits, say from 20 to 80 per week and this fluctuation may depend upon delicate changes in local conditions, such as

results showing where the ranges were sold are shown in the accompanying table.

The actual sales were effected by twenty-five district and local agents of the company and in Spokane by eight regular city salesmen, working in individual territories, and by the organization of the Electric Shop. To encourage these salesmen, Mr. McElroy issued a circular on March 31 which read as follows:

The Western Electric Company has prepared for distribution a new lighting manual giving information on lighting systems in general and on representative units which will fit into all lighting requirements. The units selected are illustrated and complete information on them, as to sizes available, wattage, distribution of light, and the method of planning and installing them, have been incorporated in the manual.

The Bryant Electric Company, Bridgeport, Conn., has recently redesigned its No. 59,107 outlet box receptacle so that the boss on the back will fit in holes 1-11/16 in. in diameter. The body of the receptacle is white glazed porcelain with shade-holder groove to receive any standard weatherproof or clamp type shade-holder taking 2 1/4 or 3 1/4-in. shades. The company has redesigned its No. 699 Spartanette attachment plug. The redesigned plug is such that the cord hole is elongated to take parallel conductor cords used for portable devices. The company's No. 75 Wrinklet keyless socket body has also been redesigned, allowing the use of bigger binding screws. The terminal connected to the screw shell of the socket has been nickel-plated to conform to the system of identified terminals. A new design of appliance switch plug to be known as No. 752 has been put on the market by the company. This plug is designed to fit 3/16-in. round pins spaced 3/4 in. on centers.

Selling Goods Over the Counter Without a Counter

Electric Supply House of Everett, Wash., Arranges Store to Get the Most Floor Space for Display Purposes

A store without a counter seems rather unusual largely because past custom has closely tied the counter with any retail establishment. The fact that the Electric Supply House at Everett, Wash., has no counter may be the reason why this concern has attracted considerable attention in the Washington city.

According to an article in a recent issue of The Edison Sales Builder, by Verne D. Harrison, of the Seattle office of the Pacific States Electric Company, "the store is without a counter, and everything is in plain view, within easy reach of the customer. In fact, it is the personal service that is the big factor in making a success for Mr. Erickson, the proprietor."

The Electric Supply House has arranged its show room with the idea that the average customer desires to see a variety of articles of the same general class before any purchase is made. To enable the customer to make a selection without causing a great amount of inconvenience for either buyer or salesman, counters have not been placed in the store. By eliminating the usual counter the company has made it possible for customers to go directly to any portion of the store to look at any class of merchandise and get within easy reach of any particular article. After getting so close the customer can view the merchandise without taking it from the shelf, thus eliminating in many cases the lost time involved in bringing numerous samples to the counter in the front of the store.

The experience of the Electric Supply House has been much the same as that of other stores that have eliminated the counter from the store fixtures. By doing away with the counter it has been found that the store is given an appearance of greater size than it would have if counters were run either across the depth of the store or along the depth. Thus greater floor display space has been obtained without the necessity of cutting down any of the wall display cases, bins or drawers.

The arrangement adopted by the Everett store is particularly adapted to locations that are of considerable depth and of small width. In the forward part of the show room there is a series of showcases fixed against the wall and equipped with sliding glass fronts. In these cases the smaller appliances are displayed and are protected from dust and atmosphere by the glass fronts. To the rear of these cases are rows of shelves set off by evenly spaced partitions in order that goods of a similar character may be kept together. The shelves and showcases are raised from the floor about 2½ ft. and extend to within about the same distance from the ceiling. Below the set of shelves there is a long shelf extending from the front of the store to the rear. This shelf is about 15 in. wide and beneath this are rows of drawers and bins.

On the opposite side of the store are rows of alcoves for the displaying of lighting fixtures of the table and bracket type. Ceiling fixtures are hung down each side of the store and each fixture is controlled by a separate pull switch.

The lamp department is maintained in the rear of the store on the right hand side. In reaching the lamp department the customer must walk the full length of the store and in so doing of course notices the displays of appliances and devices on either side. For demonstrating lamps Mr. Erickson has prepared a rotating display rack that is so designed that when the wheel on which the lamps are fastened is rotated the top lamp is lighted.

The arrangement for the store as designed and put into effect by the Electric Supply House is unique in Everett and has been found to be well suited to the displaying of commercial and industrial merchandise that the company carries.

The Henger Seltzer Company, electrical jobbers, have just opened a branch at 1125 Wall Street, Los Angeles, Calif. The firm will deal in radio and electrical equipment and will cover the entire Pacific Coast.

Standard Wiring Symbols to Be Distributed in Denver.—Copies of the revised standard wiring symbols, approved by the various national electrical organizations, have been secured by the Electrical Cooperative League of Denver, Colo., for distribution to all architects, builders, and members of the electrical industry in its territory. The symbols are printed on cardboard and are suitable for mounting or framing and carry the name of the league.

The F. W. Wakefield Brass Company, Vermilion, Ohio, has adapted a screwless holder to Red Spot hangers for commercial lighting service. The device has been called the "slide-inside" holder, as there are two slides within the holder shell which may be pushed up or down by the operation of a small protruding knob. These holders slide inside the globe, supporting it firmly. For the present this holder is available only with standard Red Spot hangers of the 6-in. size.

A WINNER'S MOTTO: KEEP ON PEDALING

By JOE OSIER

Years ago, when mutton leg sleeves and mutton chop whiskers were in vogue and the—

Bicycle built for two was a keen rig—

A business man I know, who is as welcome at a bank as a hundred thousand dollar account—

Snagged many simoleons and no few medals in bike races which sport, it will be remembered—

Had the well known populace by the w.k. ears in the days long gone.

But the march of progress put the bicycle out of biz—a Detroit manufacturer developed the national nuisance and—

The business man I know vaulted into the seat of a flying flivver and

proceeded to accumulate a barrel of doubloons and—

Today he puts the divine spark on checks which go to hundreds, comprising his pay roll.



"Keep on pedaling."

Recently while questing for an inspiration for the preachment, I buttonholed this bold buccaneer and asked him how he scaled the ladder of success. His reply, made to order for magazines featuring "How I Won My Wad" was—

"I kept on pedaling." * * *

"When I was in the bicycle racing game, I soon learned never to quit pedaling. Regardless of how much I was outdistanced; despite tough going and hard luck, I stayed in the race and, usually, crossed the finish line a winner.

"The times I didn't win, I had the satisfaction of knowing that I tried—that I did my best. And, I use the same idea—

"Keep On Pedaling—in my business today.

"When times are good, I pedal; when bad, I pedal all the harder. When volume decreases, when collections are poor, I pedal until I have a comfortable lead, then—

"I keep on pedaling.

"I never give up—never admit defeat. There is my secret. You are welcome to it."

And so I hurried from his office with the idea fixed in my mind and a determination to buy a bicycle and, forthwith, pump up the golden path that leads to—

Meat three times a day.

Business men whose affairs are in the doldrums—who are so hungry they do not know where they are going to sleep—who do not know which way to turn to—

Escape their creditors—

Can do the same as I intend to do—to-wit:

Take this bicycle idea to their bosoms—apply it in their business and—

"Keep on pedaling."

INDUSTRIAL NEWS



California Water Situation Is Analyzed by Commission

Deficient rainfall and run-off throughout California over a succession of seasons has resulted this year in the most serious drought ever experienced since records of stream flow have been taken generally in the state, according to the Hydraulics Division of the California Railroad Commission. In a statement issued July 22, the commission announced that the Sacramento River at Red Bluff on June 30, 1924, showed a discharge of 2,900 sec.-ft. compared with 3,740 sec.-ft. on June 30, 1920. The lowest previous record of discharge at this point for even less than a day period was 3,150 sec.-ft. The gage at Red Bluff is above all diversions, with one exception, on this river and thus accurately shows the situation in this basin. The discharge of the Sacramento River is still decreasing.

Other rivers of the state have been even more seriously affected by the drought. According to the commission's report the Mokelumne River at Clement showed a discharge of 15 sec.-ft. on June 30 of this year, whereas on the same day in 1920 the flow was gaged at 500 sec.-ft. Similar gagings on the San Joaquin River at Newman showed that the flow on the last day of June this year was 100 sec.-ft. as opposed to a flow of 1,960 sec.-ft. on June 30, 1920. In the vicinity of Fresno, in the Kings River Valley, it has been necessary to withhold water from some 400,000 acres of irrigated land due to the low flow in the Kings River.

The situation in the northern part of the state is represented very well by the records of the Pacific Gas and Electric Company and the Great Western Power Company. The former reports that this year the stream flow averaged over the year has been about 66 per cent of normal. For the month of July it was 53 per cent. Storage in the South Yuba, the Mokelumne and the Stanislaus Rivers is 90, 70 and 85 per cent of normal, respectively. These figures show perhaps the most favorable storage situation in the state.

The Great Western Power Company has reported that the stream flow in the Feather River is 40 per cent of normal, the flow registering 660 sec.-ft., whereas the normal flow at this time of year is 1,620 sec.-ft. Storage on the Great Western system is 47 per cent of normal.

The San Joaquin Valley has probably suffered more than any other part of the state. Last year the Kaweah River had a flow of 580 sec.-ft.; now it is carrying 30 sec.-ft. and is rapidly drying up. The Kern River, with a normal July flow of 1,350 sec.-ft., is at present carrying about 120 sec.-ft.

Huntington Lake, typical of the basin from which a large part of southern California's hydroelectric power is derived, in 1919 collected 53,000 acre-ft. which represented the lowest flow on record until 1924. This season only 17,000 acre-ft. flowed into the lake.

Utility May Refuse City Offer for Distributing System

Although no definite answer has been given to the proposition, the Colorado Springs Light, Heat & Power Company will probably refuse the recent offer made by that municipality to purchase the existing distribution system of the company. The city has proposed to buy the system for \$750,000.

George P. Riley and G. W. Munson of New York, representing the bondholders, recently conferred with the city council at which time the proposition to buy the distributing system was submitted. The company claims its system is worth double the amount offered and to prove this is desirous of having a revaluation made on the basis of the state public utilities commission valuation of 1916 minus subsequent depreciation.

According to reports from the Mountain region, this deadlock between the city and the company was expected as the next step in the tangle of negotiations resulting, first, from the failure of the company to secure a new franchise last year and, second, owing to the recent authorization of the city at a special election for sufficient bonds to build a new system including a steam generating plant.

It is understood that plans for this steam plant, which will be either 2,500 or 5,000-kw. capacity, are progressing under the direction of Franklin P. Wood, Denver consulting engineer. His firm has also completed plans for an additional hydroelectric plant for the municipal system at Ruxton Park to cost about \$50,000.

Gas and steam heating service are not being considered by the city as it is said the municipal plans provide for an electric heating and cooking rate far lower than the rates of the present company.

New Generating Plant to Be Installed at Moving Picture Studio.—To supply the needs for electrical energy of the Universal Pictures Corporation at Universal City, Calif., the company is to install 30,000 kw. of generating equipment there. The generators will be driven by Diesel engines. The current will be distributed over the company's "lot" at two voltages to facilitate the use of various types of illuminating equipment and motor driven apparatus. At present the company is using central station energy.

Federal Permits Are Issued for Klamath River Project

Preliminary permits covering power projects on the Klamath River in northwestern California have been granted to the Electro-Metals Company of San Francisco by the Federal Power Commission. Action on the applications has been delayed on granting the permits because of the fact that the state permit had not been secured. This permit has recently been issued despite the fact that the California Fish and Game Commission opposed such action.

The erection of dams on the Klamath River has been protested by the fish and game commission on the ground that salmon could not cross these obstacles. The permits that have been issued state that a plan for the protection of the salmon must be worked out before construction work may be started.

The Electro-Metals Company contemplates the expenditure of approximately \$15,000,000 on the development. The project includes the erection of a generating plant at the confluence of the Klamath and Salmon Rivers where 125,000 hp. is to be developed. It is stated that the company contemplates using the energy in electro-chemical and electric smelting plants in the vicinity of Trinidad on the California coast, north of Eureka.

Final Injunction Is Issued on Diamond Creek Project

The Diamond Creek development on the Colorado River in Mojave County, Arizona, proposed by J. B. Girand, Phoenix engineer, is indefinitely held up as the result of an order issued by United States Judge Jacobs at Prescott, making final the injunction issued by him March 22, 1924. This action was asked by the Federal Power Commission on the basis of its announced intention to allow no development work until an agreement is reached on the Colorado River compact.

Mr. Girand received a permit from the Arizona state water commission in 1923 to proceed with the project and started construction work in December, a week before his permit expired. He was halted by the Federal Power Commission, which received a court order in the form of a temporary injunction. It is possible that if no work is in progress in December of this year, the state permit will be lost. As Arizona is extremely hostile to development of the river's resources by any other agency than the government or itself, it is doubtful if an extension will be granted by the present administration.

Litigation May Be Resorted to in Idaho Rate Case

As the result of an order issued by the Public Utilities Commission of Idaho directing the Idaho Power Company to show cause why its rates for lighting and power service should not be reduced ten per cent and why the minimum charges for water and air heating service should not be substantially reduced, the Idaho Power Company, on July 24, filed a bill of complaint in the United States District Court for southern Idaho naming the public service commissioners and the state attorney-general as defendants. Although the rates fixed by the commission in March of this year apparently brought to a close rate and valuation proceedings extending over a period of four years, it is now evident that the entire case is to be opened to further litigation.

Detailed inventories, looking to a valuation of its properties, were filed by the power company, which serves a large part of southern Idaho, in October, 1920. Hearings were held throughout the year 1921, but not until December, 1922, was the commission's valuation decision entered. Further delays ensued, the rate case proper not being reached until November, 1923. The commission's rate order, issued February, 1924, unified rates throughout the territory served, eliminated discriminations, and, so it was believed, provided schedules which would give the company a return of about 7.3 per cent. Monthly reports filed by the company and checked by the commission engineer and an out-of-the-state expert showed that revenues were not exceeding what the commission had contemplated, but, yielding to what is reported to have been political pressure, a majority of the commission issued the recent "show cause" order.

Commissioner F. C. Graves, in a dissenting opinion, calling attention to alleged inconsistencies in the majority order, urging that the rates fixed in March were the result of mature, unhurried deliberation, closed with the following paragraph: "If this commission (after years of work), is to establish its own set of rates one day (which rates with the exception of water heating have simply made uniform the rates existing previously as shown by the tabulation as herein set forth), and four months and a half later ask the company to show cause why the commission's own rates should not be reduced, without giving the said rates a fair trial, it is my firm conviction that it has forfeited any right to be considered seriously, except as a necessary stopping place on the way to the courts."

Llewellyn Evans, superintendent of the light and power department of the city of Tacoma, Wash., who was called in by the commission to investigate and report on the situation, wrote a report to that body at Boise, July 19, 1924, in which he said: "The files, data sheets, plotted curves, and compilations available showed that infinite care and long study had been applied to make the findings in the recent case accurate, and the accuracy is attested by the results shown in the reports coming in from the Idaho Power Company." He commented on the physical properties of the company to the effect that he found them

in excellent condition and well and economically operated. After discussing the water heating rate at some length he said: "As to the proposed ten per cent uniform and general cut on all rates except minimum rates, I have not as yet completed my study, but from a rough comparison with the Tacoma municipal plant I can easily see that the rate payers are not being grossly overcharged."

License Extension Granted for Yuba River Development

The license issued the Excelsior Water & Power Company, Smartville, Calif., on March 24, 1924, has been extended by the Federal Power Commission so that the maximum period is 25 years instead of 10 years. This change was authorized when the company advised the commission that it would be unable to finance the project unless the term were extended.

The license covers a development on the South Fork of the Yuba River in Nevada County, California. The project is not the most effective use which can be made of the resources of that stream. It seems entirely probable, however, that 25 years will elapse before it will be feasible to undertake a more comprehensive project. For that reason the commission extended the period of the license with the understanding that the license will terminate two years after the commission may have issued a license for a more comprehensive project. The licensee, however, is to be given preference in the extension of rights for the development of the entire stream.

Silver Creek Permit Is Granted to City of Sacramento

A preliminary permit has been granted by the Federal Power Commission to the City of Sacramento, Calif., which will permit diverting the upper tributaries of the Rubicon River into Silver Creek, a tributary of the South Fork of the American River. The idea is to develop power in Silver Creek and to carry this water from the mouth of Silver Creek through a conduit to Sacramento for water supply and for irrigation purposes in the vicinity of the city.

The California Power Board recommends that the Rubicon should not be diverted out of its own basin but should be developed in its natural course. The preliminary permit will require the city to make that alternation in its plans.

A protest had been filed with the commission by the Western States Gas & Electric Company. That company claimed that Sacramento's project would injure its project on the South Fork of the American River by reducing the flow of Silver Creek. The city, however, entered into negotiations with the company and the protest was withdrawn.

Oak Grove Plant to Be Opened Aug. 6.

The formal opening of the Oak Grove plant of the Portland Electric Power Company will be celebrated Aug. 6. President Coolidge will press a button on his desk in Washington to start the plant. Guests from the Northwest will be in attendance at the opening of the first unit of the new power house.

Edison Company Puts Additional Steam Plants in Service

The Southern California Edison Company, in an effort to meet the emergency caused by the water shortage in California, has placed in service a total of 26,620 hp. in steam capacity in the form of small or obsolete plants which have been leased from industrials in southern California. In addition one 13,000-hp. turbine has been purchased and installed in record time in the Long Beach steam plant and two 6,500-hp. turbines which were supplied by Eastern manufacturers were placed on the line July 15. Work is progressing rapidly on the Long Beach No. 2 steam plant, which will have a capacity of 93,000 hp., and which will be in operation by Jan. 1, 1925.

The plants which have been leased from industrials and rehabilitated follow:

Pacific Electric Railway—	Hp.
Vineyard Substation Plant.....	4,600
Sixth and Central Plant.....	13,000
Anaheim Sugar Company	660
Huntington Beach Sugar Company.....	660
Santa Ana Sugar Company.....	400
Los Alamitos Sugar Company.....	660
Monolith Cement Company.....	1,300
Union Tool Company, Torrance.....	660
Sugar Pine Lumber Company, Fresno.....	2,600
Standard Oil Company, Whittier.....	400
City of Riverside Plant.....	530
Chino Sugar Company.....	820
Oxnard Sugar Company.....	330
Total.....	26,620

Neither of two plants which have been leased from the Pacific Electric company have been in operation for ten years.

In addition energy is being purchased from the following sources:

	Hp.
Los Angeles Gas & Electric Corporation	33,000
City of Pasadena.....	13,000
San Diego Consolidated Gas & Electric Company	5,300
Total.....	51,300

A contract has been made with the San Joaquin Light & Power Corporation, Fresno, to deliver 16,500 hp. commencing Aug. 1.

Initiative Measure to Prevent Dams on Klamath Filed

One hundred and thirty thousand signatures to an initiative measure which would prevent the construction of power dams or any other artificial obstruction in the Klamath River in California have been filed with the Secretary of State at Sacramento, Calif. The Act, known as "a measure creating the Klamath River fish and game district," is sponsored by the salmon interests, sportsmen and the California Fish and Game Commission. It prohibits the construction or maintenance of any dam on the river below its confluence with the Shasta River in Siskiyou County and provides for several penalties should its provisions be violated.

The filing of the initiative petition has particular bearing at the present time in view of the fact that the Federal Power Commission has just issued preliminary permits to the Electro Metals Corporation of San Francisco for a development on the river. This company plans to expend \$15,000,000 for the construction of a 125,000-hp. plant at the junction of the Klamath and Salmon Rivers.

West Receives Attention at World Power Conference

Representatives of Thirty-five Countries Discuss Problems of Electrical Industry in All Parts of World

By ROBERT SIBLEY

Special Correspondence

Today, July 12, the first World Power Conference is closing its sessions at London and those of us who have taken part in its discussions realize that a number of things have transpired in its deliberations to make it stand out as a new mile post in international endeavor.

The five thousand pages of reading matter contributed in papers before the convention covering, in complete detail, the present status of world power development in all its ramifications, in themselves constitute an achievement worth the effort involved in bringing the great conference to life.

But I think that even more important than this are the contacts that have been established among the thirty-five different countries represented in attendance that will enable our industry in the future to better take advantage of present world knowledge for future progress, and at the same time better to co-ordinate effort in economic power development.

The conference was called by a group of British manufacturers largely to gather at the British Empire Exposition, which is a notable undertaking in itself, a representative group of men from the nations of the world to see the steps that the British Empire is making in industry, in engineering and in the arts. It has far exceeded expectations.

Listed among those in attendance at the Power Conference were the greatest and most noted names in present day engineering achievement from every part of the globe.

Three things have developed at the conference that are of unusual interest to men of the electrical industry in the West. First, the West has come in for its share of attention throughout the discussions as a leader in long distance high voltage transmission with its economic network of distribution lines. In the second place, the increasing attention that is being given in the West to uses of electricity in agriculture has been followed with marked interest; and in the third place, the pronouncement by no less an authority than Arthur T. Hadley, president emeritus of Yale University, before the sessions that the electrical industry as a progressive and still experimental industry needs the nurture and attention of private initiative to bring it to its full economic evolution, created a profound impression.

Dr. A. E. Kennelly at one of the banquets ably sounded the keynote of the convention when he said that the new understanding among people and nations is more and more coming to be that title to property is not absolute but is accompanied by a trusteeship of the owner that bears with it the obligation to better society generally in the uses to which property is put.

The conference came to a close by passing unanimously the following declaration: "That this conference is of the opinion that the world's most crying need today is greater production and manufacturing activity among its peoples under conditions which will pro-

mote individual prosperity and happiness, and that this can be largely achieved by the fuller development of national power resources and by the establishment of the most economical means for the general distribution and utilization of energy."

Large Synchronous Condenser Is Ordered for Vaca-Dixon

The Westinghouse Electric & Manufacturing Company, through its San Francisco office, has received an order from the Pacific Gas and Electric Company for a 40,000-kva. synchronous condenser to be placed in the Vaca-Dixon substation. The machine will be the largest of its type ever constructed and will be used for voltage regulations on the 220-kv. line from Pit No. 3 power house. It will supplement two 20,000-kva. machines which are now in operation at the substation.

A 1,800-hp. motor will be direct connected to the condenser to permit its operation as a generator for line testing purposes. This is the first time that a synchronous condenser has been planned for this kind of special service. The condenser unit will be approximately 20 ft. long, 14 ft. 8 in. high, and will weigh 180 tons. The machine with its immediate auxiliaries represents an investment by the Pacific Gas and Electric Company of approximately a quarter of a million dollars.

During the last three years approximately 400,000 kva. in synchronous condenser capacity has been sold to central stations in California. It is estimated that 85 per cent of this equipment has been Westinghouse.

Fire Damages Southern California Edison Steam Plant

Fire at the 53,000-hp. Redondo steam plant of the Southern California Edison Company at Redondo Beach, Calif., July 15, was caused by the failure of an oil switch to clear a dead short on one of the 15,000-volt lines one mile from the plant. The switch exploded and caused a hot oil fire which lasted for three hours. Foamite was finally used to extinguish the flames.

One section of the south 15-kv. bus was damaged as were the leads to other switches and instrument transformers. A large hole was burned in the south side of the building and the adjacent roof. The fire was confined to one switch gallery. A duplicate gallery was unharmed, permitting the resumption of full plant operation in five and one-half hours after the trouble occurred.

The damage is estimated at only \$3,000. The fire started at 1:30 a.m. According to H. G. Butler, power supervisor, the system loss was 160,000 kw-hr., an appreciable amount in view of the acute power shortage.

Engineering Foundation Publishes Year Report.—A report containing a record of the activities of the Engineering Foundation for the year ended Feb. 14, 1924, has recently been published.

Baker River Permit Issued to Washington Utility

A permit authorizing the Puget Sound Power & Light Company to begin work on its Eden power site on the Baker River in Skagit County, Wash., has been issued by Marvin Chase, state supervisor of hydraulics. The development involves the construction of a hydroelectric plant with an ultimate estimated capacity of 45,000 hp. at a cost of about \$3,500,000, and the formation of a reservoir capable of impounding 50,000 acre-ft. of water at an estimated cost of \$1,500,000.

The company will be permitted to appropriate 4,000 sec.-ft. of water from the river. The diversion dam will be 235 ft. high, 325 ft. wide on top and 100 ft. wide on the bottom. The reservoir will flood 1,600 acres, the maximum depth being 200 ft. and the approximate mean depth 31 ft. The dam, power house and other improvements will be of concrete.

Three Substations to Be Built by Portland Company

The Northwestern Electric Company of Portland, Ore., is planning to erect three new substation units for regulation and distribution of current through the city. The three sites are at East 30th Street just south of Hawthorne Avenue, at 17th and Madison Streets, and on 17th Street between Pettygrove and Overton Streets. Equipment will be installed at these places for semi-automatic control of voltage through the adjacent districts. In the past the Northwestern Electric Company has maintained street transformers in these districts. The substation sites will be surrounded with shrubbery and will be made as attractive as possible.

Each substation will have a capacity of 3,000 kw. and the semi-automatic features will make the attendance of an operator unnecessary. This new apparatus will be ready for service about Oct. 1, and will cost approximately \$130,000.

Finance Corporation Opens Coast Offices in San Francisco

The Household Utilities Finance Corporation, of Chicago, Ill., has recently opened Pacific Coast offices at 322 Rialto Building, San Francisco, Calif. Tracy W. Simpson, formerly western district manager of the Federal Electric Company, has been appointed Pacific Coast manager of the company which specializes in the purchasing of dealers' installment contract balances on articles sold for the home. The company also has a special plan of financing the contracts of ranchers and other agricultural buyers who do not have regular monthly incomes and are therefore not susceptible to being sold on the monthly payment basis.

This company is said to be the largest in the United States operating exclusively outside the field of automotive financing.

Relation of Electricity to Mining to Be Considered at Convention.—At the annual convention of the American Mining Congress, to be held at Sacramento, Calif., Sept. 29 to Oct. 4, the greater utilization of electric power in mining will be considered. One entire session will be devoted to this discussion.

New Home Occupied by San Diego Public Utility Company

Finding that the growth of San Diego, Calif., was putting a serious strain upon its office facilities, the San Diego Consolidated Gas & Electric Company in 1923 purchased the Timken Building at the corner of 6th and E Streets in San Diego. After the former tenants had vacated and the necessary changes were made, the doors of the new commercial offices of the San Diego Consolidated Gas & Electric Company and the ground floor of the renamed Electric Building were opened to the public June 16, 1924. Several views of the new offices are presented on page 82 of this issue.

For three years prior to the purchase of the building, the executive and engineering offices of the company had been located in the Timken Building, a whole floor having been rented for the purpose. Upon the acquisition of the building, the eighth floor was immediately remodeled and the executive offices of the company moved to that location. Extensive improvements on the second and third floors were also begun. The removal of two of the elevators, and their replacement by high speed safety elevators, was also started.

Work on remodeling of the ground floor for the new commercial offices was not begun, however, until the first of this year, because of leases held by previous tenants of the quarters. Under the direction of H. R. Peckham, assistant general superintendent, the new offices were speedily put in shape.

The change recently made by the company places the commercial, collection, investigation, and securities departments in the south half of the main floor. The north half is occupied by a bank.

The color scheme employed, as well as the entire decorative effect, has been toward a dignified simplicity and warmth. Upon entering the lobby, the customer sees a room lighted by a softly colored, concealed light. The floor is of light gray linoleum, inlaid with black. The counters and fixtures are fronted with Houteville marble of a cream-tan color, in which a delicate niching has been chiseled. The baseboards are of black Belgian marble and the woodwork of a brown mahogany. Mahogany furniture is used throughout to conform with the general color scheme. Directional notices are contrived from partitions of plate glass, in which the lettering is etched and lighted by concealed lamps underneath the base, which throw invisible rays of light up against the etching in the glass.

In equipment, the offices have been given the benefit of the most up-to-date machinery. An extensive intercommunicating dictagraph phone system, as well as a telephone system from the central switchboard, places every department in close contact with the other. The information girl at the entrance has a substation dictagraph from which she can reach all departments in the building.

Pneumatic tube systems connect the order, investigation, collection and new business departments with the billing, meter readers and records departments of the company. The telephones at the counters are provided with a special niche on the inside of the counter, concealed from public view and yet handy for those who may wish to use them.

A "kick" space underneath the counters makes it easy for the attendant to work close to the counter without inconvenience. Vaults for the storing of records upon the main floor and in the basement have been made commodious and well lighted.

The collection wickets are unique in the absence of any grilles. Instead a protected wall of the Houteville marble has been built on each side of the wicket to protect the change-making machines and records of the company, kept behind them. The cashier clerks are also placed in direct touch with the bookkeepers and other officials of the company by means of intercommunicating phones. The collection wickets are located in the rear of the lobby, making for greater protection of the funds handled.

A rear passageway connects the commercial offices with the special rooms of the new business and paymaster's

departments, located on the E Street side of the building, also on the main floor. Here the new business department has a range and water heater exhibit and it is from here that the salesmen operate.

A large room in the basement is being prepared for an electric range and appliance demonstration room as well as for gas appliances and general exhibits of company material. A gas sales testing laboratory is in the rear of this demonstration room. The billing department which has to be kept in close contact with the collections and order departments, is located on the north side of the second floor of the building in a spacious, well lighted room. Communication between the billing offices and the ground floor offices is maintained through both the pneumatic systems and the new intercommunicating phones.

Please Use 3 Lights Instead of 4

Why the farmers especially ask you for this great co-operation. Your action will *help save their crops*. It will help to keep general business better, on which *your own* prosperity largely depends.

8 Ways

You Can Save Electricity In Your Home

1. Unscrew all bulbs from lighting fixtures not absolutely needed.
2. Unscrew unnecessary bulbs in chandeliers and group lights.
3. Use smaller bulbs where over possible.
4. Turn off lights when not needed (listen to your radio in the dark).
5. Arrange so two or more persons can read from same lamp.
6. Use porch, hall, garage and basement lights only when immediately required.
7. Put away your electric utensils—coasters, percolators, waffle irons, etc.—use the kitchen stove. Discontinue temporarily the use of electric fans.
8. Enlist the aid of servants and all members of your family to save electricity.

Practice These Savings In Your Business

1. Discontinue all local sign and display lighting.
2. Discontinue all flood lighting.
3. Use only half the usual lighting to show windows. Basis one watt per square foot.
4. Reduce interior lighting by removing at least one-fourth the lamps.

ONE light less in four deprives you of very little light. Please give the electricity that light saves to the Southern California farmer. He needs it very badly and you can spare it.

Southern California's crops, valued at 180 million dollars, depend on adequate irrigation.

The need is this:

There is a great power shortage.

Due to the light rains and consequent deficiency of hydro-electric power, Southern California is lacking in enough electricity to take care of its normal requirements for light and power.

Electricity is a farm necessity. Electrically operated pumping stations furnish most of the water used for irrigation.

Due to light winter rains there is no moisture stored in the soil this year and more than the usual amount of water is therefore needed. Water drawn direct from our

mountain watersheds is also scarce, necessitating more pumping. As a result, the below-the-surface level of water has dropped so that our wells must go deeper and therefore require more electricity for pumping.

And now, on top of this need for extra irrigation, comes a 25 per cent curtailment of electricity on the farm.

Thus Southern California's valuable agricultural crops may suffer through lack of water. And any blow dealt our basic industry—agriculture—means a direct loss to every firm and person in Southern California.

But enough electric power to maintain our farm production can be furnished if all waste and non-essential use of electricity be immediately eliminated.

You can help in this emergency if you will save and stint in the use of electricity. Los Angeles can protect its own prosperity by saving electricity for the farmer.

These two organizations, representing thousands of farm homes and farm workers, appeal to the public-spirited citizens of Los Angeles to meet this emergency.

California Fruit Growers Exchange
California Walnut Growers Association

Save Electricity and Save the Crops

To encourage southern California domestic and commercial consumers of electricity to assist in conserving electric energy, advertisements of this character have been placed in the leading papers in that vicinity by the California Fruit Growers' Exchange and the California Walnut Growers' Association. Cooperation of this sort is also being requested by other farmers' organizations in order that greater quantities of power may be made available for use in the agricultural districts for irrigation.

Unusual Cooperation by San Diego Electrical Body

In Collaboration with I.B.E.W., the U.S. Marine Corps and the Mayor a Charitable Home Is Wired Gratis in One Day

A mayor, a major-general of the U.S. Marine Corps, the electricians' union and the whole electrical industry of San Diego, Calif., were recruited to a notable act of charity on May 10, by the San Diego Electrical Exchange, formerly the Contractors' and Dealers' Association, when the complete wiring installation of the Helping Hand Home in San Diego was done in one day by these combined forces, labor and materials for the entire job being donated to the cause.

The Helping Hand Home is a private hospital supported by private donations, dedicated to the care of the children of tubercular parents, especially those who may be touched by the disease themselves. Funds for the erection of a new building were raised recently but these funds were felt by the Electrical Exchange of San Diego to be needed badly for other things besides wiring. Wanting to see that nothing but the best of electrical equipment

went into the new structure, the Exchange arranged to have the entire work done without one cent of cost to the Home.

The International Brotherhood of Electrical Workers, local No. 569, responded unanimously to the invitation of the Exchange. Saturday is a holiday with them and so the work was planned for May 10. Materials were furnished by the contractors and dealers. The street railway company furnished transportation to those who were to work on the job, and the power company was ready with a crew to set the meter and turn on the power the minute the city electrical inspector said the word.

Operations began at 8 o'clock in the morning, with about seventy electricians on the job. This force was soon augmented by the city electrical inspection force, the contractors, the city officers, the mayor, power company employees, Major-General Joseph H. Pendleton of the Marine Corps, and others.

Carl Heilbron, who was appointed foreman for the job, laid out the work by sections and stripped every man of his collar and tie before work started.

Mayor John Bacon was made a tool carrier and general helper, Major-General Pendleton was assigned pipe bending because he claimed to have had some experience in the line, and everyone entered into the occasion with a holiday spirit that rushed the job through far ahead of schedule. At noon all hands knocked off for lunch, which was provided and served by the women of the Home and the wives of the electrical men. The job was so soon completed that the first group was laid off at 1:30 in the afternoon and the last at 2:45 p.m., when the power was turned on.

When the plastering is done and the Home made ready for the installation of fixtures, these, too, will be put in by the contractors and electricians of San Diego, who received so much joy out of the work they did for common good that they are anxious to repeat the experience. It is estimated that the electrical work completed in that one day would have taken a month to complete under ordinary circumstances and would cost about \$3,000.



Some of the members of the San Diego Electrical Exchange who donated material and services for wiring the Helping Hand Home for children of tubercular parents. The work which would ordinarily have cost the home \$3,000, was done in less than one day and the contribution represented the gift of the combined electrical interests in San Diego.

San Francisco Power Bond Issue Temporarily Abandoned

A decision to abandon, for the present, the proposal to call a bond election to secure additional funds for a municipal distributing system was made at the July 23 meeting of the public utilities committee of the San Francisco Board of Supervisors. At the same meeting the committee recommended that a special election be called within the next few months to vote bonds for further financing of the city's Hetch Hetchy water project. For some time it was doubtful as to whether or not the two proposals would be combined in one bond issue.

Warren Shannon, chairman of the committee, recommended that the bond issue for the distribution system be withheld until after the California Railroad Commission has made its valuation of the San Francisco distributing systems of the Pacific Gas and Electric Company and the Great Western Power Company. This recommendation was accepted by the committee.

Columbia River Power License Action Delayed.—The Federal Power Commission has delayed action on the application of the Washington Irrigation & Development Company for a license for a power project on the Columbia River at Priest Rapids. The commission has informed the applicant that no action will be taken until next fall. The company contemplates the erection of a 90-ft. dam at the site for irrigation and power development.

Colorado Utility Plans to Double Steam Generating Equipment.—Due to the oil boom in northwestern Colorado and the resultant industrial and commercial development of the region, the Craig (Colo.) Light & Power Company is planning on doubling its steam generating equipment. Engineers are now engaged on the plans and will later outline an addition to the distributing system.

Forest Resources of West Are Threatened by Fires

Forest resources of California are threatened, this year, by the most serious fire menace in the history of the state, according to the San Francisco office of the United States Forest Service. The principal cause of the danger is the unusual dryness of grass and brush due to drought and warm weather of the present season. Up to July 21, the Forest Service reported that approximately 900 fires had been discovered in the state. Two hundred of these fires were on state and private lands outside and 700 on government and private lands inside the national forests. On July 20 the burned area had reached the total of 150,000 acres and the estimated damage was around a million dollars. The two most hazardous months of the present season are yet to come.

In an effort to control the situation forest service officials have had up to 1,800 men fighting the fires, but on July 21 the forces had been reduced to about 450 men. The national forests have been closed to campers and the district forester has asked for and has secured federal troops to patrol the territory where the danger is greatest.

The fire menace is also serious in Oregon, Washington and Idaho. To date the fires have not been so extensive as those in California. In some parts of the Northwest July rains have relieved the situation somewhat.

Report on Northeastern Superpower Published.—A report designed to show the engineering and legal aspects of power development in Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland and the District of Columbia, has recently been published by the Northeast Super Power Committee. Herbert Hoover was chairman of the committee. The report contains a comprehensive resumé of the growth of demand for power and recommends the extension of interconnection between the companies. A large number of charts and maps illustrate the committee's report.

Excess Power to Be Diverted to Southern California.—The California Railroad Commission has approved an arrangement whereby the Pacific Gas and Electric Company and the Great Western Power Company will divert their excess electric power to southern California to assist in relieving the shortage there. The power will be delivered by the two companies over the systems of the Coast Valleys Gas & Electric Company and the San Joaquin Light & Power Corporation. The Southern California Edison Company will receive the energy for distribution. The arrangement was made under the direction of H. G. Butler, state power supervisor.

Bear River Company Applies for Permit.—An application for a permit to appropriate 250 sec.-ft. and 100,000 acre-ft. of water from the Bear River in Placer and Nevada Counties, Calif., has been made to the California Department of Public Works by the Bear River Water & Power Company of Auburn. The company proposes to develop 42,994 hp.

Semi-Annual Report of California Cooperative Campaign Published.—Presenting the high points of the California Electrical Cooperative Campaign's work during the first six months of 1924, a mimeographed report of the organization's activity has been published. The report tabulates and records the work done in connection with its adequate wiring program, the electric home program, better lighting program and the miscellaneous activities. Announcement is also made that plans have been completed for the displaying of three more electric homes in the state. These exhibits will be offered at San Rafael Aug. 15-25; at Santa Cruz, Aug. 22-31; and at Napa, Sept. 1-15.

Municipal Plant to Be Built at Fallon, Nev.—Owing to the extreme water shortage, the town trustees of Fallon, Nev., have advertised for the construction of a \$50,000 Diesel electric generating station to be erected and in operation by Aug. 15, 1924. Officials of the Nevada Valleys Power Company have reported to the city that the Lahontan hydroelectric plant will be closed down by that date as the water supply in the Lahontan reservoir will be exhausted.

Hetch Hetchy Power Line to San Francisco to Be Completed Jan. 1, 1925.—City Engineer M. M. O'Shaughnessy has made public a report which states that the transmission line from the Moccasin Creek power house to San Francisco will be completed not later than Jan. 1, 1925. The line is 98½ mi. long and is carried on 507 steel towers furnished by the Pacific Coast Steel Company at a cost of \$438,000. Two types of conductors are being used, copper with a hemp core and aluminum-steel cable. The Anaconda Copper Mining Company is furnishing 177 miles of the former at a cost of \$195,000 while the aluminum cable is being supplied by the Aluminum Company of America at a cost of \$389,000. Insulators costing \$141,000 are being furnished by the Westinghouse Electric & Manufacturing Company.

Will Not Urge Granting of Green River Application.—There is no disposition on the part of the Utah Power & Light Company to press its Green River application at this time, it is understood. The company recognizes that any effort at this time to alter the determination of the Federal Power Commission to hold up all applications involving the Colorado Basin could but have the effect of precipitating an acrimonious controversy. There is a feeling that development of the Colorado cannot be held up indefinitely but insofar as the Utah company is concerned the present is not regarded as a propitious time to agitate the matter.

Electric Safety Lamp Being Tested in Wyoming Coal Mines.—Preliminary tests are being made in the mines of the Union Pacific Coal Company in the Rock Springs, Wyo., coal mining district, of new electric mine safety lamps, looking toward complete installation. The new type lamps are to supplant the old and dangerous carbide lamps. They are fastened to the miners' caps and are connected with an insulated wire that leads to a battery carried on the miner's belt.

Application Made for Dam Site on Mokelumne River

Despite the lack of reservoir sites on the Mokelumne River, in California, Stephen E. Kieffer, of San Francisco, believes that at one point on the river a large reservoir can be operated successfully, thereby saving a portion of the run-off of that stream. His plans which have been filed with the Federal Power Commission, with his application for a preliminary permit, call for a high dam in the Mokelumne River, which will divert the water into a large basin on Dry Creek.

The Mokelumne River was considered by the city of San Francisco in connection with its water supply problem, but in conformity with a report made by C. E. Grunsky, it was rejected in favor of the Hetch Hetchy project. At the present time the cities of Alameda County are considering the Mokelumne River in connection with the study of their water supply resources.

General Electric Company Employees Enjoy Outing.—Following the usual custom, the employees of the Los Angeles, Calif., office of the General Electric Company, with their families, held their annual picnic at Hermosa Beach on June 28. About two hundred and

Books and Bulletins

MECHANICAL ENGINEERS' HANDBOOK

By LIONEL S. MARKS, Editor-in-Chief, Professor of Mechanical Engineering, Harvard University. 1,986 pages, 1,000 illustrations. Flexible binding, 4½ x 7 in., thumb indexed, \$6.00. Travelers' Edition in pocket-size waterproof flexible Keratol covers, with separate index, \$8.00. Published by McGraw-Hill Book Company, Inc., New York, N. Y.

The second edition of this handbook contains valuable revisions that place it on a strictly 1924 basis.

To quote from the preface:

"The second edition is an attempt to state the best engineering theory and practice as it stands at the beginning of 1924 in those branches which are of the most interest to the mechanical engineer.

"Revisions have generally been made by the original contributors, but in cases where the original contributor was not available the work has been done by other specialists."

Important sections on drying and lubrication have been added and despite condensation of material about one hundred and fifty pages have been added. Manufacturers' tables have been reduced to those fully standardized and largely segregated.

The subjects of hydraulics, heat, iron and steel, non-ferrous metals and alloys, bearings, steam boilers, internal combustion engines, aeronautics and air compressors have undergone the most changes. Each section is complete in itself and represents the best work of the best available authority on that subject.

That the book has carved its niche at the engineer's side is evidenced by the fact that the first edition has amounted to 65,000 copies.

Meetings

Denver League to Hold Fourth Annual Picnic Aug. 7

The fourth annual picnic and outing of the Electrical Cooperative League of Denver, Colo., will be held Aug. 7. Preliminary plans have been announced by J. C. Davidson, chairman of the entertainment committee.

A half holiday is planned by the electrical industry in Denver and suburban territory so as to permit of a program that will start with a ball game at two o'clock in the afternoon and will end with a theater party at night. The picnic will be held at one of the nearby amusement resorts as has been the practice in former years.

There will be races and all forms of stunts, according to V. N. Garretson who is heading that particular activity. A special number will be featured for members of the League's advisory board. Prizes, donated by the industry, will be given to all winners and a special appliance drawing will be held at dinner time to determine the award of fifty prizes ranging from a washing machine to a flashlight. E. C. Headrick, former chairman of the league, is in charge of this activity.

Over 2,000 tickets have been distributed for sale and it is the opinion of A. E. Bacon, vice-chairman, that last year's attendance will be topped. H. D. Randall, the new chairman, will return to Denver from the East in time for the outing.

San Diego Electric Club Holds July Social Meeting

To celebrate the opening of the new line of the San Diego Electric Railway from San Diego to La Jolla, Calif., and to visit for the first time the new hotel at La Jolla, known as Casa de Manana, the San Diego Electric Club held its July social outing at the hotel on July 15. The club members were interested in both projects as many of them had been active in the construction of the street car line and others had done the wiring on the new hostelry.

Following the arrival at the hotel, dinner was served and later parties spent the evening in dancing and in visiting the interesting parts of the hotel. An electrically lighted moon, shining in the patio, brought forth considerable favorable comment from the visitors. Sixty-five members and guests attended the meeting.

Plans for Camp Cooperation IV Are Being Formulated

Acting on a resolution passed at Camp Cooperation III, held in September last year, The Society for Electrical Development has organized Camp Cooperation IV. This will be the third annual conference of representatives of national and local cooperative organizations and others interested in local business-building activities. The dates of the conference to be held at Associa-

tion Island, Henderson Harbor, N. Y., are Sept. 2-6.

A committee under the chairmanship of J. E. North, president of the Electrical League of Cleveland, is responsible for the business program. Some of the subjects selected by Mr. North's committee for inclusion in the program are: Red Seal Campaign, Selling Electrical Merchandise Through Community Electrical Exhibits, How to Interest Women in Electrical Equipment for the Home, Field Service Work, Store Lighting Campaigns, Selling More and Better Industrial Electrical Equipment, How the Local Electrical Cooperative Organization Benefits the Various Branches of the Industry. At least one full business session will be devoted to the Home Lighting Contest, sponsored by the Lighting Educational Committee.

The necessity for some satisfactory method of tying in local cooperative organizations was discussed last year at Camp Cooperation III and a committee, under the chairmanship of Earl E. Whitehorne, was appointed to draw up a plan. This committee will be prepared to make a report.

COMING EVENTS

Conference of Representatives of Electrical Leagues—

Camp Cooperation IV, Association Island, Henderson Harbor, N. Y.
Sept. 2-6, 1924

Rocky Mountain Division, N.E.L.A.—

Annual Convention—Glenwood Springs, Colo.
Sept. 15-17, 1924

Colorado Public Service Association—

Annual Convention—Glenwood Springs, Colo.
Sept. 15-17, 1924

California State Association of Electrical Contractors and Dealers—

Annual Convention—Santa Cruz, Calif.
Sept. 19-21, 1924

Pacific Division, Electrical Supply Jobbers' Association—

Quarterly Meeting—Del Monte Lodge, Pebble Beach, Calif.
Sept. 25-27, 1924

Association of Electragists, International—

Annual Convention—West Baden Springs, Ind.
Sept. 29-Oct. 4, 1924

Illuminating Engineering Society—

Annual Convention—Briarcliff Lodge, Briarcliff Manor, N. Y.
Oct. 27-31, 1924

Jobbers to Meet at Del Monte Lodge in September.—The next quarterly meeting of the Pacific Division of the Electrical Supply Jobbers' Association will be held at Del Monte Lodge, Pebble Beach, Calif., Sept. 25-27. Reservations for the meeting are being received by Albert H. Elliot, secretary of the association. The capacity of the lodge is limited and members have been urged to make reservations immediately.

Ogden Engineers Hold Banquet.—The Ogden chapter of the American Association of Engineers tendered a banquet to the members of the Ogden press on the evening of July 9, in appreciation of the cooperation given by the newspapers in the publicity contest conducted nationally. The Ogden chapter has won the contest each year for the last three years, thereby obtaining permanent possession of a banner given as a prize. Charles W. Cross, president of the chapter, was master of ceremonies.

Sacramento Valley Electrical Society Meeting

The regular meeting of the Sacramento Valley Electrical Society was held at the Hotel Land, Sacramento, Calif., July 9, at 6:30 p.m. "Hal" Willis presided over the dinner and business meeting and gave a report of his trip to Coronado where he attended the meeting of the Pacific Coast Electrical Association.

The program of the evening was in charge of the electrical contractor-dealer members of the society. The principal speaker was "Bob" Prussia of the Westinghouse Lamp Company, San Francisco, who gave an interesting address on "The Commercial Advantages of Proper Illumination." Ellis Purlee related humorous stories, and musical selections were rendered by Curlee's Jazz Orchestra.

Annual Convention of Illuminating Engineering Society to Be Held Oct. 27-31.

The annual convention of the Illuminating Engineering Society will be held during the week of Oct. 27 to 31 at Briarcliff Lodge, Briarcliff Manor, N. Y. A papers program is being arranged by Frank C. Taylor, chairman of the committee on papers, embracing such subjects as: Daylight Illumination in Factories, Sky Brightness Report; Color Standards and Nomenclature; a session at Boyce Thompson Institute for Plant Research devoted to the effect of light on plant growth; store, window and showcase lighting; theatrical and decorative lighting; street lighting practice in the United States; school lighting; Light and the Speed of Vision; Psychology of Light and Color; Glare; Eye Defects in Industrial Work, and others.

California Industries Exposition to Be Held Oct. 18 to Nov. 1.

Reservations for exhibit space for the Fourth Annual California Industries Exposition, to be held in San Francisco Oct. 18 to Nov. 1, are being received. The Palace of Electricity, featured for the first time last year, will be reserved for electrical exhibits again this year. Special attention will be paid to this section by the exposition management. To assist the electrical exhibitors, a special committee of the San Francisco Electrical Development League, headed by C. L. Chamblin of the California Electrical Construction Company, has been appointed.

Electragists' Manager to Address Meetings.

Members of the electrical industry of Oakland, Calif., have been invited to attend a meeting to be held Aug. 6, at which Laurence W. Davis, general manager of the Association of Electragists, International, will be the principal speaker. The meeting will be held in the auditorium of the Pacific Gas and Electric Company Building in that city. Mr. Davis will also speak before the San Francisco Electrical Contractors' and Dealers' Association on Aug. 7, at the organization's regular weekly meeting held at the States Restaurant at 12:15 p.m.

A.E.S.C. Year Book Is Published.

The American Engineering Standards Committee has recently published a report of its activities during the past year.

Manufacturer, Dealer and Jobber Activities

The Westinghouse Electric & Manufacturing Company has recently published two supplements to its 1923-24 catalog of electrical supplies. The first, Supplement 4 to Section 8-B of the catalog, gives a description and price list of Paragon post tops for ornamental street lighting equipment. This post top can be equipped with the new Bi-lux refractor, making a very efficient and attractive unit for street lighting purposes.

Frank E. Herthum has purchased the business of the Peerless Fixture Works, 2410 South Main Street, Los Angeles, Calif. He will continue the firm name and will do a general wiring and repair business in addition to the manufacture of fixtures.

The Sawtelle Electric Company, which has been occupying temporary quarters during the construction of its new building at 11308 Santa Monica Boulevard, Sawtelle, Calif., has moved into the new building.

The Glendora Electric Company, formerly located at 181 North Michigan Avenue, Glendora, Calif., has moved into its new building at 121 North Michigan Avenue of the same city. Better facilities for appliance and fixture display are presented in the new location.

The Industrial Works, Bay City, Mich., has recently put on the market a new 10-ton crawling tractor crane. One of the features claimed for the new crane is the independent control of the traveling, slewing and hoisting motions. Information concerning the crane may be secured from the manufacturer.

Quigley Furnace Specialties Company, Inc., New York, N. Y., has issued a booklet devoted to a description of the use of Hytemptite in the power plant. The bulletin shows how the product may be used in new and repair jobs in furnaces.

The J. G. Blount Company, Everett, Mass., has recently placed on the market a new ball-bearing motor-driven buffing machine of large capacity for buffing heavy plates, brass tubing, etc. The new machine is claimed to be of exceptionally heavy construction and is driven by a 7½-hp. Westinghouse motor operating at 1,800 r.p.m. and controlled by a push button.

The Lionel Corporation, New York, N. Y., has recently been granted a registered trade mark on the words "Lionel Standard." The mark "Lionel Standard" has been used by the company to identify its line of toy trains for the 2¼-in. gage track and since the words have been registered it will continue to use the name.

The Johns-Pratt Company has issued a sheet of revised catalog numbers to supplement its Catalog 53. The sheet refers to Noark universal service switches.

The Economy Fuse & Manufacturing Company, Chicago, Ill., has recently appointed Morgan P. Ellis general sales manager of the company. Mr. Ellis has been assistant sales manager of the company for the past eight years.

H. F. Elliott has purchased the business of the Jennings Electric Store, 912 Broadway, San Diego, Calif. Mr. Elliott is specializing in the sale of electrical appliances.

The Tork Company, Inc., New York City, has announced the election of Ralph D. Ward as vice-president of the company. Mr. Ward is also president of the Electruck Corporation.

The Western Pipe and Steel Company of California is issuing an interesting house organ under the title of "Western Pipe and Steel News." The first issue contains interesting illustrations of the application of steel water mains and corrugated culverts.

S. S. Kingston has opened a new radio store at 10 Fourth Street, San Francisco, Calif., where he will carry a complete stock of sets and parts.

Wagner Electric Corporation, St. Louis, Mo., has prepared for distribution three booklets relating to the Fynn-Weichsel motor. The booklets are entitled, "The Motor that Corrects Power Factor," "Some Recent Comprehensive Tests on the Fynn-Weichsel Motor" and "Tests on the Fynn-Weichsel Motor." The first two of these are by H. Weichsel, chief designing engineer of the Wagner company, the first being a reprint from Iron and Steel Engineer and the second a paper read before the joint convention of the Southwestern Division of the National Electric Light Association and the Southwestern Public Service Association. Royce E. Johnson is the author of the third paper which was presented before the Electric Section of the Wisconsin Utilities Association.

The General Electric Company has recently placed on the market a new type of induction time delay overload relay, to be known as the IA-201. The contact mechanism of this relay is claimed to be of an improved design, the contacts themselves being so arranged that they cannot be closed by vibration or jar. A target is provided to indicate that the relay has operated.

Russell Electric Company, Chicago, Ill., has recently placed on the market a new model curling iron. The device is 10¼ in. overall and the curler rod is 6 in. in length.

The Connecticut Electric Manufacturing Company, Bridgeport, Conn., has placed on the market new types of plates for toggle switches and for convenience outlets. The plates are all made of brown Bakelite and are designed for use in homes where it is desirable to eliminate the use of brass plates. The company is now supplying the plates on its toggle switches and on both single and duplex unit receptacles.

Maydwell & Hartzell, Inc., San Francisco, has moved its Los Angeles, Calif., office from the Metropolitan Building to the Transportation Building in that city. The company has recently been appointed distributor for the Valley Manufacturing Company of Woodburn, Ore. The latter company manufactures insulator pins and brackets. The appointment of the company as Pacific Coast distributor for two other manufacturers has also been announced. The new contracts are with the Providence Insulated Wire Company of Providence, R. I., manufacturer of rubber insulated and weatherproof wires and cables; and the Harrah Manufacturing Company of Bloomfield, Ind., manufacturer of Handyman pole puller and other construction tools.

Groundulet Company, Newark, N. J., has printed an article by Stephen W. Borden, entitled "Protective Grounding of A.C. Services." The article is replete with information on protective grounding. Various data in the paper are secured from the company's bulletin "Groundits and Groundology." Either article may be secured from the Groundulet Company.

The Great Western Electric Company, 615 East Ninth Street, Los Angeles, Calif., has recently enlarged its quarters in order to take care of increased business.



Merchandisers of electrical appliances have learned to analyze conditions and it may be for that reason that they make good fishermen. F. H. McGinnis of Sacramento, Calif., seems to be no exception to the rule as the string of fish he, together with Clinton O. Bailey and Elmer Christophel, brought in recently, indicates. We figured the average catch to be 14 1/3 fish. What's your average?

Personals

H. H. Jones, for the past fourteen years president and general manager of the San Diego Consolidated Gas & Electric Company, San Diego, Calif., has been made vice-president in charge of operations of the Northern States Power Company, the largest of the Bylesby properties, with headquarters at Minneapolis, Minn. Mr. Jones was



H. H. JONES

born in Reading, Pa., and graduated from Lehigh University with the degree of civil engineer. During the Spanish-American War he served with the Fourth Pennsylvania Volunteer Infantry. His business experience covers service with the Chicago, Peoria & St. Louis Railway, the City of Reading, Pa., the Pennsylvania Railroad, the Chicago & Northwestern Railroad, and the Springfield, Ill., Consolidated Railway Company, for which he managed first the street railway, and, later, the gas and electric distribution as well. For a year prior to coming to San Diego, he was manager of the Sand Point division of the Northern Idaho & Mountain Power Company, now the Mountain States Power Company. During his residence in San Diego he has taken an active part in commercial and civic affairs of the city. At a farewell reception held in his honor by the employees of the gas and electric company and their families Mr. Jones was presented with a platinum watch, chain and pen knife.

Leslie W. Nims, formerly division superintendent under Carl H. Wolf from in the Idaho Falls, Idaho, division of the Utah Power & Light Company, has been appointed manager of that territory.

Harry W. Alexander, formerly director of publicity for The Society for Electrical Development, has been elected vice-president of Beatty & Company, insurance adjusters and brokers of New York City.

E. E. Walk, engineer of the Los Angeles office, General Electric Company, has returned from a trip of several weeks, having visited the various factories of that company in the East.

Carl A. Wolf from, formerly manager of the Utah Power & Light Company at Idaho Falls, Idaho, has been appointed to succeed Ray Timmerman as manager of the Provo, Utah, division, with headquarters at Provo. Mr. Timmerman has resigned to accept a position with the Adirondack Power & Light Corporation at Schenectady, N. Y. Mr. Wolf from has had many years' experience with the company, having first become associated with the Telluride Power Company, a predecessor of the Utah Power & Light Company, in 1902, as operator and plant superintendent of the Provo and Olmsted plants.

H. L. Jackman, manager of the Western States Gas & Electric Company, Eureka, Calif., was a recent visitor in San Francisco.

Edgar Kobak, formerly business manager of Electrical World and Industrial Engineer, has been appointed assistant vice-president of the McGraw-Hill Company, New York City, acting as assistant to the vice-president in charge of electrical publications.

J. H. Rudd, formerly assistant business manager of Electrical World and Industrial Engineer, has been named acting business manager of both papers.

N. M. Hope has recently become affiliated with the California Electrical Construction Company of San Francisco and will act as superintendent of construction for the company. Mr. Hope, during the past year, has been the San Francisco representative of the A-G Manufacturing Company of Seattle, Wash. Previous to his association with the switchboard manufacturer, Mr. Hope was connected with the electrical department of the Turner Company in San Francisco.

E. O. Shreve, San Francisco, Calif., district manager of the General Electric Company, has returned from an extensive trip to Schenectady, N. Y., and other Eastern cities. Mr. Shreve went East via the Panama Canal on the steamer Finland to attend the annual meeting of the Electrical Supply Jobbers' Association at Association Island.

W. C. Caffray of the Electric Sales Company, Los Angeles, Calif., recently spent some time in San Francisco.

Herbert H. Frost, Chicago, Ill., manufacturer of radio equipment, was a recent visitor to San Francisco, Calif. Mr. Frost represents the Cunningham line in the East.

L. D. O'Connell, of the Westinghouse Electric & Manufacturing Company, was recently transferred from the El Paso, Texas, office to the merchandising division of the Los Angeles office.

Clare N. Stannard, vice-president and general manager, Public Service Company of Colorado, Denver, Colo.; **A. C. McMicken**, sales manager, Portland Electric Power Company, Portland, Ore.; and **A. Emory Wishon**, general manager, San Joaquin Light & Power Corporation, Fresno, Calif., have been appointed regional directors to carry out the work of the Better Home Lighting Activity campaign.

M. P. Cannon of Latourette-Fical Company and **R. J. Finchley** of the California Mechanical & Electrical Engineering Company were among the contractor-dealers from Sacramento, Calif., who attended the recent meeting of the California State Association of Electrical Contractors and Dealers held at Pit River.

R. H. Ballard, vice-president and general manager of the Southern California Edison Company, Los Angeles, Calif., was a recent visitor to San Francisco on business for his company.

Tracy W. Simpson, formerly Pacific Coast manager of the Federal Electric Company, Chicago, Ill., has been appointed manager of the Western office of the Household Utilities Finance Corporation, Chicago, Ill. The Pacific Coast offices of the concern will be in the Rialto Building, San Francisco, Calif.

G. C. Ward of the Southern California Edison Company, Los Angeles, Calif., recently visited San Francisco.

J. C. Jones, manager of the central station division of the Westinghouse Electric & Manufacturing Company, Los Angeles, Calif., recently went East to visit the Newark Works of that company.

T. E. Bibbins, president, and **D. E. Harris**, vice-president and sales manager, Pacific States Electric Company, San Francisco, Calif., recently returned from New York and Association Island.

S. W. Scott of the Westinghouse Electric & Manufacturing Company, Los Angeles, Calif., recently returned from an Eastern trip, having visited the Pittsburgh, Pa., and Springfield, Mass., Works of that company.

Hiram W. Clark, who was recently elected president of the Utah Section of the American Institute of Electrical Engineers, graduated from the University of Utah in 1917 with a B.S. degree in electrical engineering. For six months following that time he was associated with the Denver Gas & Electric Company as junior engineer, and until the summer of 1918 was also doing engineering work with various fuel companies in Colorado and Utah. He then took up work with the United States Bureau of Mines, and devoted considerable time to the study and application of the Cottrell precipitation process. In the fall of 1920 he entered into smoke



HIRAM W. CLARK

investigation work with the engineering department of Salt Lake City, Utah, and was later appointed chief deputy smoke inspector and special assistant to the city engineer. His activities since that time have been largely devoted to handling some of the problems of smoke abatement in Salt Lake City. Mr. Clark is known as an enthusiastic worker for the best interests of the American Institute of Electrical Engineers in his section.

C. E. Grunsky, consulting engineer of San Francisco, Calif., has been elected president of the Pacific Division of the American Association for the Advancement of Science.

Frank T. Broiles, of the International Electric & Machinery Company, Los Angeles, Calif., lately returned from an extended tour of various electric motor manufacturing plants in the East and Middle West.

Robert ("Bob") Prussia, of the San Francisco office of the Westinghouse Lamp Company, recently delivered an address before the Sacramento Valley Electrical Society, Sacramento, Calif., on "The Commercial Advantages of Proper Illumination."

W. A. J. Guscott, president of the Denver, Colo., Electrical Contractors' Association, has been elected vice-chairman of the Electrical Cooperative League in that city.

T. C. Bond, electrical contractor of Chicago, Ill., paid a visit to San Francisco, Calif., recently.

Gilbert C. Tompkins, president of Research Engineering Corporation, New York City, has gone to Europe to attend the World Power Convention.

A. J. Clark, for the last thirteen years agent at Vancouver, B. C., for the Canadian Pacific Telegraph Company, has been promoted to superintendent of traffic and tariff at Winnipeg, Man.

Arnold Pfau, president of the Wire-less Resistor Company of America, Milwaukee, Wis., was a recent visitor to San Francisco, Calif.

Clyde L. Titus, Wyoming state manager of the Mountain States Telephone & Telegraph Company and well known in public utilities activities, has been elected president of the Wyoming Utility Association, after serving for a year as vice-president. Mr. Titus is one of the old-timers in the telephone business, having first entered the employ of the telephone company in 1882 at Denver as relief operator and general handy



CLYDE L. TITUS

man after school hours. In 1893 he returned to the telephone business and in 1906 was made Denver district manager. He served in this capacity until 1917 when he went to Wyoming as manager of the Cheyenne district. Later, this district was extended to include the entire State of Wyoming with headquarters in Cheyenne. He is active in club affairs, being one of the charter members of the Kiwanis Club at Cheyenne.

J. C. Hobrecht of the J. C. Hobrecht Company, Sacramento, Calif., has recently become a member of the Association of Electragists, International.

H. F. Hartzell, of Maydwell & Hartzell, Inc., has just returned from an extensive trip to the Northwest. Among other points he visited Sandpoint, Idaho; East Milwaukie, and Portland, Ore., where he inspected various pole treating plants.

H. E. Sherman, Jr., vice-president and sales manager, Illinois Electric Company, Los Angeles, Calif., and **J. H. Jamison**, merchandise manager, Los Angeles branch of the Westinghouse Electric & Manufacturing Company, have just returned from a six weeks' trip to Chicago, Ill.; Mansfield, Ohio; Pittsburgh, Pa.; New York City and other Eastern points. While in the East, they also attended the National Electrical Supply Jobbers' Convention at Hot Springs, Va.

F. H. Woodward, general sales manager of the Great Western Power Company, San Francisco, Calif., has just returned from an extensive trip to Eastern cities. During his absence he attended the annual convention of Lions' Clubs at Omaha, Neb.

George J. Williams, Jr., for twenty-three years with the Pacific Gas and Electric Company, San Francisco, Calif., and for the past several years assistant purchasing agent of that company, has resigned to become a member of the firm of Richards Hardwood Lumber Company, San Francisco.

R. T. Stephens, superintendent of the new business department of the Pacific Gas and Electric Company, Sacramento, Calif., recently returned from a trip through the East and Middle Western states.

Harry L. Harper, Los Angeles, Calif., district manager, Western Electric Company, has just recently returned from an extended trip East, where he visited the main factory at Chicago, Ill., and various other branch factories.

John C. Jones, manager supply department, Westinghouse Electric & Manufacturing Company, Los Angeles, Calif., has just left for an extended trip to the factories at East Pittsburgh, Pa., and Mansfield, Ohio.

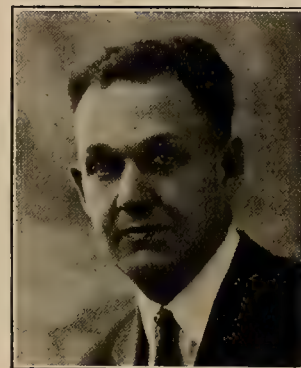
Charles G. DuBois, president of the Western Electric Company, New York City, recently sailed for Europe on business for his company.

R. D. Bean has been appointed chief engineer of the Brown Instrument Company, Philadelphia, Pa.

C. B. Crutchfield, of Hopkinsville, Ky., has been appointed southern field sales manager for the Leach Company of Oshkosh, Wis., manufacturers of concrete mixers, builders of saw rigs, and logging and line construction tools.

Herman Stadler, chief of the land classification branch of the U. S. Geological Survey, was in Salt Lake City, Utah, recently, preparatory to a trip which is now under way, with **R. A. Woolley**, hydraulic engineer attached to the Salt Lake City office of the survey, into the Green River basin looking over the possibilities for water power and storage development. Following the survey of the Green River basin the two plan to visit the Bear River basin and other regions of the state for the purpose of determining possible water power development.

J. C. Plankinton, best known through his ten years of electrical work in the Hawaiian Islands, on July 1 became sales manager of the Northwestern Electric Company at Portland, Ore., replacing Jay S. Groo. Mr. Plankinton is now in charge of all the commercial activities of the company. After graduating at the Oregon Agricultural College in 1910, with the degree of A.B. in electrical engineering, he went directly to the General Electric Company testing department where the better part of two years was spent. The latter part of this period was used in an intensive sales training course. The year 1913 found him in the San Fran-



J. C. PLANKINTON

cisco office of the General Electric Company where he spent less than a year and was then transferred to Honolulu as sales engineer with Catton, Neill & Company, representatives of the General Electric Company in the Philippine and Hawaiian Islands. Mr. Plankinton held this position for seven years and then became manager of the Hilo Electric Light Company at Hilo, T. H. Since 1923 Mr. Plankinton has again been on the Pacific Coast, part of the time with the Pacific States Electric Company at San Francisco.

A. G. Hoffman, representing the Midwest Radio Company of Pittsburgh, Pa., was a recent San Francisco visitor.

Percy H. Booth, vice-president and district sales manager, Los Angeles, Calif.; **Philip Randolph**, chief engineer, and **Grant Call**, manager of heavy duty equipment department, Chicago, Ill.; **Ray W. Turnbull**, assistant Pacific Coast sales manager, and **Ralph J. Cordiner**, special representative, Portland, Ore.; and **Bert Rowley**, manager, Salt Lake City, Utah, comprised a party of officials of the Edison Electric Appliance Company that recently visited Spokane, Wash.

J. P. Pullium, president of the Eastern Oregon Light & Power Company, and **A. G. Carson**, the president's assistant, have been visitors in Baker, Ore., coming from Milwaukee, Wis., to visit the Cove plant, the North Powder station and other power company properties.

T. W. Carlson, of the Benjamin Electric & Manufacturing Company, Chicago, Ill., has become affiliated with the Denver, Colo., office of that company and will cover the Rocky Mountain territory.

Trade Outlook

San Francisco

Business in wholesale and retail trade, manufacturing and industry is fair. Credit conditions are good; collections have slowed slightly. Interest rates are at low levels. New manufacturing enterprises are reported increasing in the bay section, and the market for articles manufactured locally is gradually becoming wider.

The iron and steel trade reports business quiet, but there is an optimistic feeling that there will be improvement from now on. Real estate transactions are reported as slightly below those of the same period last year. Department store sales have declined somewhat and stocks on hand are larger than at this time last year, which would indicate slower turnover of goods.

In the electrical line prices are fairly steady with an upward tendency, except in certain radio equipment such as amplifiers, some of which have been quite sharply reduced. Several export orders for assorted electrical goods have been placed by Mexican and Central American plants, but business from the Far East is rather uncertain.

On the whole, the feeling seems to prevail that prospects are good for active fall trade and that now is the time to make plans to take advantage of it.

Los Angeles

General business conditions show an improvement for the first two weeks of July, and increases have been noted in electrical manufacturing, jobbing and retailing lines. This condition prevails despite the slump in the building industry, which is approximately 30 per cent below the corresponding period of a year ago. There is a slight increase in bank clearings as compared with those for the same period last year.

The power shortage has adversely affected the sale of electrical heating appliances and major household devices. The "silver lining" to the power shortage is shown, however, in the increased sales and orders for farm lighting units and electrical generating equipment which have taken a sudden upward spurt, the demand for the latter being due to the fact that a larger number of industrial concerns are installing auxiliary power plants. Sale of radio sets and supplies is holding up well even under unfavorable weather conditions. Electric fan sales have not come up to expectations.

There is an abundant supply of labor with an over-supply in some lines. However, wages are remaining firm as are the prices of all commodities.

Portland

No marked change has been noticeable in general business conditions during the past two weeks. The volume of retail sales in general compares favorably with that of a year ago. Lumber production and shipments during the

first half of this year ran a close second to the high records of 1923. Present production is light. A large volume of building construction is going on in all parts of the city, including a number of big jobs in the downtown retail district. The price outlook is favorable.

A survey recently made by the Oregon Public Utilities Information Bureau shows that the six principal light and power companies produced during the first six months of the year 14.2 per cent more energy than for the same period in any previous year. Betterment expenditures for all of these companies this year will be above normal and will total between fifteen and twenty million dollars.

The weather continues dry, requiring that the steadily increasing portion of the central station loads be carried on steam. In Portland the power companies are able to carry less than 50 per cent of their energy on hydro, a condition that has never existed before.

Seattle

Business conditions continue quiet. The shutdown over the Fourth of July, customary in the lumber industry, is being extended by some of the mills. There is little activity in commercial logging.

Building keeps up at a good pace, and plans for new construction, aggregating about \$1,265,000, are now being considered.

The grocery business reports that, while business for the first half of the year has not been quite equal to that for a corresponding period in 1923, there is a feeling of optimism and improvement is looked for in the fall. Prices remain about the same, with a somewhat diminished demand due, in a measure, to the reduction in operations in the lumber industry. Conservative buying, both wholesale and retail, is reported. Bank clearings, as compared with this period last year, have declined.

Spokane

General conditions show little change, though there is a somewhat greater feeling of optimism in business circles than there was in June. The wheat crop has been estimated at 50 per cent of normal. Harvesting is now in progress and in many cases the actual yield is greater than that forecast.

In lumber circles, a curtailment of logging has resulted from a serious drop in prices, which have in some cases fallen below cost of production. This condition has helped the local wood-working plants which have taken advantage of the low prices to build up stocks of raw material.

The industrial power consumption in Spokane for June showed approximately 15 per cent decrease as compared with that of 1923. This reflects the condition of local manufacturing. The packing plants are working at ex-

cellent output and prices of livestock are being maintained at good figures.

Local activities in electrical merchandising are slack, due to general retail conditions which are poor. This is a seasonal effect, inevitable in the height of the vacation season. Mining production, particularly of silver-lead properties, is being conducted on a large scale. There is a distinct tendency of local investors to patronize new offerings of stock in legitimate lead-silver developments. The fruit crop for the whole Inland Empire is going to be very low, but good prices are expected. Altogether, this territory is in satisfactory shape and a good winter is anticipated.

Denver

Bank clearings, per capita savings, new building construction, employment and the general banking situation here are excellent. A slightly pessimistic note is evident, however, due possibly to the impending presidential election or the direct result of alleged business curtailment in the East. There is a surplus of unskilled labor, clerical help and migratory harvest workers.

Additional possibilities of oil in this state continue, and Denver is rapidly becoming a petroleum metropolis. New wells have been brought in both in the north central and norwestern fields, thus proving the discoveries of the existence of oil and gas made last fall. Commercial activity in the oil fields proper is booming.

Electrical jobbers report a slight falling off in sales. Many believe it a seasonal condition rather than actual depression. Central station operators are optimistic although there has been a small decrease in power demand. Hydro plants are not suffering from a shortage of water, and there is plenty of coal as most mines in the region are working on half time as is usual at this time of the year.

Salt Lake City

There appears to be no material change in the business outlook for the Intermountain section during the past month. Some concern is felt in the agricultural territory on account of unusually dry weather. Dry land grain cutting is under way in some places, but the crop is below normal due to the dry season. Irrigated grains, however, are doing well, and the fruit crop in general is expected to be fairly good, although it will be below that of last year. Last year, however, was exceptionally heavy, especially in apples.

Industrial activity continues satisfactory. This is particularly noticeable in flour milling, where new high records in output are reported.

Electrical appliances are in fairly good demand, and building activity is furnishing considerable work for electrical contractors. Retailers in various lines report that there is room for improvement in business, but this situation is somewhat due to the natural summer quietness.

Collections have not been so good during the past few weeks. This is largely due to the vacation season. The general business outlook is favorable. There appears to be no reason for pessimism, and, in fact, there is little evidence of it.

Journal of Electricity

5 Cents a Copy

August 15, 1924

San Francisco

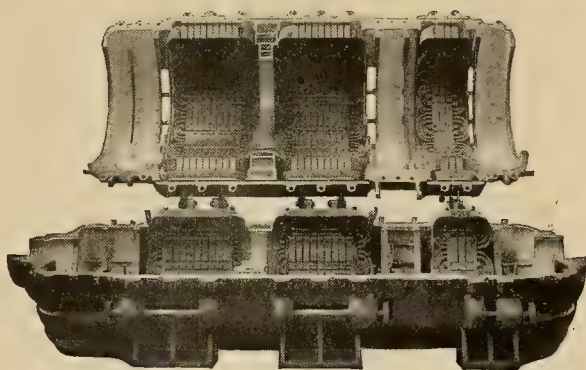
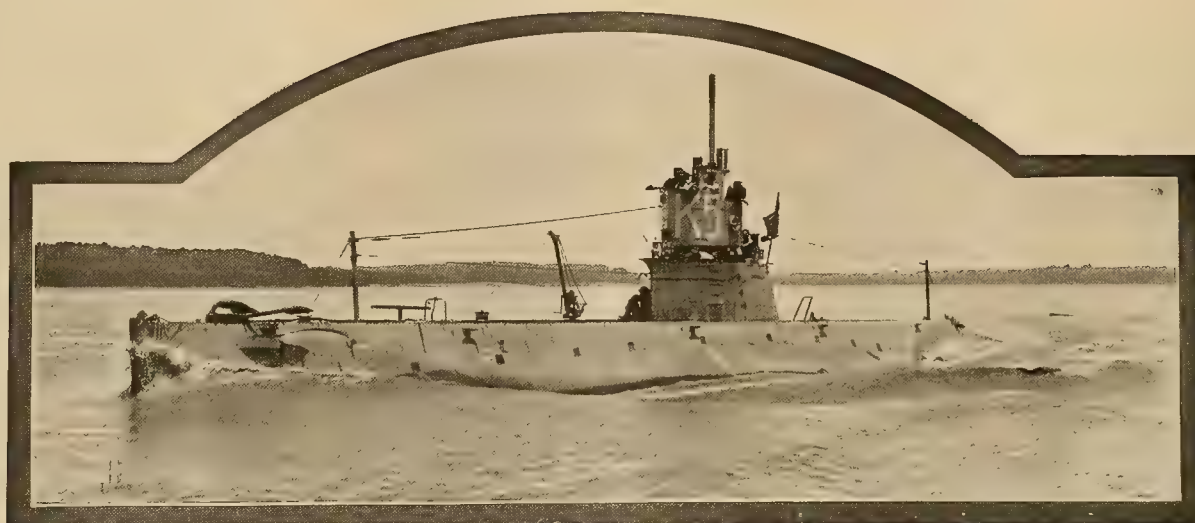


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Data Book on Central Station Customers

HERE is an announcement that will be interesting news to our friends within the electrical industry. For some months our sister publication, the *Electrical World*, has been engaged in a comprehensive research for the purpose of determining the number of central station customers by states and counties in the United States. These customers include domestic, commercial and industrial, actual and potential, and with them is tabulated the population, so that the degree of penetration of the electrical idea may be determined not merely in each state, but in each county in each state as well.

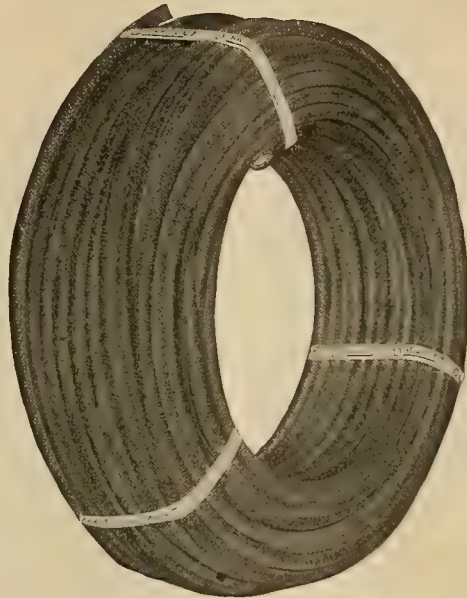
It would seem that these data must prove immensely valuable to every institution within the electrical industry. By their use, manufacturers may set up their sales quotas, central stations may do the same, as well as see for themselves what sort of a showing they are making compared with other sections of the country. Advertising executives will find this work of great help in their market surveys and reports to their clients of market possibilities.

A book has been prepared by the McGraw-Hill Company presenting the result of this research in a systematic manner for ready reference. We believe that it will prove to be a most valuable addition to the reference library of all branches of the electrical industry, especially in the Western territory.

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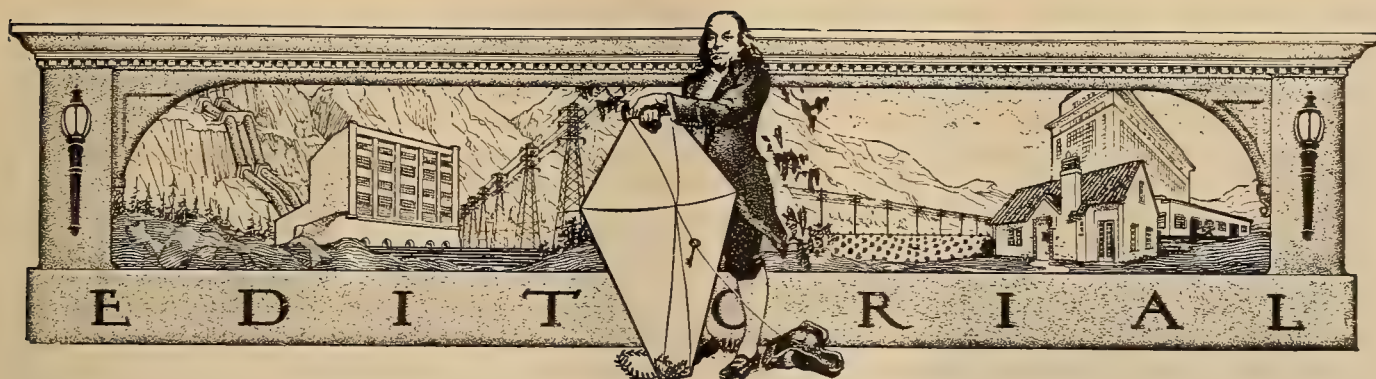
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Edison Rate Case Reopened by Commission

THERE are responsibilities involved in commission regulation that work both ways. When the Southern California Edison Company was confronted with a set of conditions due to the unprecedented drought that indicated a loss in gross revenue for 1924 of some \$5,600,000, it applied to the California Railroad Commission for relief. It was pointed out that the company was compelled to purchase from neighboring utilities such power as they could spare, and at prices considerably in advance of their own cost of generation under ordinary conditions. These facts, plus the generation of power from supplementary steam stand-by plants at even higher cost, placed the Edison company in a serious predicament indeed in its efforts to serve its consumers on the one hand, and keep the wolf from the door on the other.

Since the principle of commission regulation, as interpreted in California, does not permit of rates that will allow the accumulation of sufficient surpluses to tide over such emergencies, it would appear that the obligation of the commission to protect the stockholders and investors in Edison securities is just as binding as their obligation to protect Edison customers from the imposition of excessive rates.

Apparently a majority of the commission thought so, for an opinion was rendered granting a 10 per cent increase in rates for all service except agricultural beginning Sept. 1 next, Commissioners Seavey and Shore dissenting. Nevertheless, this minority dissent has resulted in reopening the case, the new hearings beginning in Los Angeles on Aug. 13 for the purpose of hearing additional evidence. We believe that the Edison company is justly entitled to consideration of its request. The evidence submitted will determine the amount. In the meantime, we hope that political considerations may not interfere with what seems to us a simple act of justice.

Good Goods and Customers

IT is the resident population, not the transients, that makes a great community. By the same token, it is the customers, and not the one-time buyers that make success in a business enterprise. There is only one way to make a customer out of a one-time buyer, and that is quality goods—in other words, to render a service so satisfactory that the customer wants more of the same medicine.

Customers cannot be made by discourteous, slipshod business methods, nor can they be held by a so-called "bargain," that consists of a piece of shoddy merchandise, sold at a "reduced" price, that cannot perform its functions as the customer has a right to expect.

To solicit business, and to accept an order places a definite obligation on the merchant. The customer expects of the merchant truth in merchandising—that the goods shall be as represented, either verbally, in advertisements, or as implied by the very nature of the merchant's business. He is backing his faith in the merchant's honesty and sincerity of purpose by buying his goods. Caveat emptor may be perfectly good Latin, and an accepted principle of law, but in practice, it is the merchant that should beware, before he sell anything that converts his customer from an advertisement into an indictment.

The cheapest goods are quality goods. Dear goods are shoddy goods sold at a low price to one-time buyers on the principle that, as Barnum said, "One is born every minute." Great institutions, like the house of Tiffany, or Marshall Field, or Wanamaker, are erected on the former principle alone. Nothing of any lasting good was ever built upon the latter.

Proverbs—

Public Relations—Ashes

ORDINARILY we have little regard for proverbs. They attempt unsuccessfully to reduce the wisdom of the ages to a single sentence. The "rolling stone" metaphor, "Silence is golden," and all the rest of them are true only under specific conditions, and should not be considered as all-inclusive by the unpedantic seeker after knowledge.

It serves our purpose, however, to incorporate into this discussion one of the well-known maxims, which, when applied to the public relations phase of the central station business, contains enough truth to justify quotation. Here you have it, then, "It is the little things in life that count," and indeed, in the central station business, friends or enemies are made by a tone of voice, a facial expression, a word or a deed—things so small in themselves as to be scarcely noticeable at the time of their occurrence.

Among the "little things" we like to see around a central station office or salesroom, where customers come to do business, are ash receivers. The cigar and cigarette, thank goodness, are still tolerated in a land where the "chaw" is frowned upon and three per cent beer is a high crime, and one of the ways

for us smokers to keep the reformers from attacking our one remaining vice is to keep the process of smoking as clean as possible. Perhaps the subject is not worth an exhaustive survey but we venture to guess that nine men out of ten would prefer to deposit their tobacco ashes in a regularly appointed receptacle rather than on the floor or counter, and that five men out of the nine are so sensitive about the matter that their discomfort increases directly in proportion to the length of the ash. It is conceivable that the sale of a share of stock or of an appliance to one of those men may be lost because, in the absence of an ash-tray, he is nervously edging toward the door in the hope of arriving before the force of gravitation overcomes the tensile strength of a column of cigar ashes. You say this is far-fetched? Perhaps, but a great many of the things we do today to build satisfactory public relations were fetched a long way, so to speak, since the central stations first began to recognize the fact that the public relations problem was a problem.

Let us paraphrase the above proverb to suit our needs, and then you may accept or reject it as you will: Public relations, good or bad, is built on a multiplicity of little things.

Water Heating and the Electric Range

COMBINATIONS that promote through union the strength that the old copy book axiom would lead us to believe is most desirable are an interesting subject for thought. Ham and eggs, pork and beans, even liver and onions tickle the palate of the gourmet in a way not possible for either if taken singly.

Combinations, where affinities are joined together in bonds of gastronomic wedlock, may also find application in more prosaic pursuits. Take the old-fashioned cook-stove, the coal burner. Every stove or range was regularly equipped with a so-called "water back," through which the bath water for the then conventional Saturday night function was heated. The stove with the water back was the ham-and-eggs of the domestic menage.

Its successor, the gas range, brought about a different situation to a degree. The gas flame was applied directly to the boiler in most cases, thus Reno-izing the functions of the preparation of food and the periodical bath, and doing away with the utilization of by-product heat. This was probably due to an advanced civilization, which demanded baths at more frequent intervals than were possible under the former arrangement.

Now comes the electric range, and its helpmate, the electric water heater. Should the manufacturer and his salesman, plus the central station, adopt the policy of insisting upon the installation of both as a logical and natural combination, or should they be satisfied with either as the case might be as constituting a course along the lines of least resistance?

New installations would obviously offer a clean-cut prospect for both the electric range and the water heater. Existing domestic equipment, where gas or coal are being displaced by electric equipment, is another problem. While it is not consistent,

strictly speaking, for the electrical salesman to permit gas water-heating to remain in possession of the field while extolling the advantages of the electric range, for instance, yet, the greater the amount of money involved in the change, the greater the sales resistance, even to the point of keeping electricity out of the kitchen, if a 100 per cent job is insisted on at one time.

It would appear wiser to install one thing at a time, and then follow up a few months or so later, and make the job complete after the convenience and utility of electric heat in one application has had time to make itself manifest.

The Campaign for Better Lighting

THERE could be no better evidence of the broad, constructive attitude of the electrical industry toward those whom it serves than the recently formed Lighting Educational Committee for the purpose of promoting better lighting. This committee is made up of representatives of the electrical manufacturers, lighting glassware equipment, and in fact all those who contribute toward the production of lighting apparatus and fixtures. Its purpose is to bring about a more intelligent conception of the better lighting idea, its advantages, and its effect upon both home and industrial life.

It is through education that the committee hopes to accomplish these desirable ends. Financed to the extent of \$500,000 contributed by the representative concerns engaged in the production of apparatus and lighting fixtures, the conduct of the affairs of the committee will be without profit, without the exploitation of any particular kind or type of apparatus or fixture, and will function in an advisory capacity only. To carry on the work, regional directors have been appointed, who will in turn give their time to this enterprise without compensation.

In order to create interest in the movement, an interesting campaign of education has been planned, including a prize essay for school children for which a \$15,000 home will be the first prize. The entire world must benefit from this movement.

Money Will Not Buy Rainfall

THE California press recently carried the statement that Colonel R. B. Marshall, author of the Marshall plan for the storage and conservation of the waters of the state, has announced that had the Water and Power Act been passed in 1922, the present drouth and water shortage would not have been as serious as it is. Colonel Marshall further urges the people of the state to pass the Act at the November election, so that there may not be another shortage in the future. Certain other proponents of the Water and Power Act have made similar statements, and have even gone so far as to blame the water shortage and the resultant power curtailment upon the privately owned power companies.

The absurdity of these statements is apparent when even a cursory survey is made of the water

conditions in the state. The six principal power companies, having a reservoir capacity of approximately 800,000 acre-ft., showed a maximum storage of only 49 per cent of capacity at any time this year. In 1923 the maximum storage was 96 per cent of capacity. The Modesto-Turlock Irrigation District's Don Pedro reservoir with a capacity of 295,000 acre-ft. showed a maximum storage of 61 per cent this year. Two of the major water companies in the northern section of the state stored but 49 and 37 per cent respectively of their reservoir capacity. These nine utilities—power, irrigation and water—with a total reservoir capacity of one and a quarter million acre-ft., stored less than 635,000 acre-ft. of water this year or only 51 per cent of the capacity of the reservoirs. Not a single one was able to approach 100 per cent. In 1923 the water stored in these same reservoirs filled them to 91 per cent of capacity.

It is ridiculous to attempt to place the blame for the present water shortage upon an agency. And it is inconceivable that \$500,000,000 or one dollar could have been spent this year to produce a single additional inch of rainfall, despite Mr. Hatfield and all the other so-called rain-makers.

Only a Brave Man Could Smile

A Western contractor-dealer recently worked up an attractive installation job, doing all of the electrical specification work, laying out circuits and attending to all of the multifarious details in connection with such work. He quoted a fair figure that would allow a thorough job and would return a modest profit. Throughout the entire transaction he acted in the best of faith with his client. When the quotation was filed with the owner, that individual—in this case a large concern—immediately made overtures toward a jobber of electrical material, these overtures looking to the purchase of the material direct from the jobber. The long and the short of the story is that the jobber sold the material direct to an industrial concern; going around the contractor, the industrial concern hired wiremen to do the work and the contractor lost the job. The contractor is still a member of the Courteous Service Club.

Lighting Schools Should Receive Support of the Industry

RECOGNITION of the need for educating the industry to better standards of illumination is contained in an announcement on another page of this issue that the Lighting Bureau of the Pacific Coast Electrical Association will hold two schools of illumination in San Francisco and Los Angeles during September. It is not the plan of the schools to make, or even try to turn out, illuminating engineers from raw material in two weeks. It is planned, however, to give those attending a thorough grounding in all of the fundamental and basic principles with which trained engineers work. Attendance will be from the ranks of the central stations, jobbers, contractor-dealers, architects and builders.

An interesting feature of the course will be that no fee will be charged but each student will be re-

quired to deposit \$10 from which \$2 will be deducted for each day that he is absent. This has been done to assure attendance by those who enroll. The attendance has been limited to 50 at each school.

The advantage to the industry in having a number of men in both northern and southern California well grounded in the principles of proper illumination needs no comment. The fact that the men who are to furnish the instruction in the course are donating their time makes it imperative that the industry support the schools. Such opportunities do not knock every day.

The Political Bearing of the Water Shortage

IF there has been any doubt in the minds of the people of the utility of interconnection of power lines, that doubt ought to be dispelled in the light of the existing emergency due to the water shortage. We have the interesting phenomenon of the situation of the Southern California Edison Company being helped at its southern end through the agency of the San Diego Consolidated Gas & Electric Company, at its northern end by the San Joaquin Light & Power Corporation who in turn are being assisted by the Pacific Gas and Electric Company.

This is cooperation in the highest meaning of the word, made possible by the foresight and initiative of the power companies themselves under private ownership. In the meantime, what bearing on the political situation will the water shortage have? Will the proponents of the California Water and Power Act attempt to take advantage of the irritation of southern California consumers at having their ordinary power requirements arbitrarily reduced one-quarter, and ascribe the difficulties to alleged shortcomings of private ownership?

Intelligence tests conducted by the army during the war showed that the average intellect of the enlisted man was that of a normal boy of twelve years of age. This same conclusion, conceivably, could be applied to the average voter, so, it would appear, this country is really being governed, through the exercise of the franchise, by grammar school children. Certainly those who have the signing habit when approached by solicitors for initiative petitions such as that in favor of the state ownership of water and power are not likely to represent any greater intellectual development than was disclosed by the army tests.

Such being the case, it would not be surprising if a feature of the forthcoming campaign would be an attack upon the power companies for not providing a normal rainfall in the winter of 1923-4. Truly, democracy has its drawbacks but the situation must be dealt with on the basis of conditions as they are. The initiative has come to stay. Every citizen of twenty-one or more years of age may vote without regard to his mental qualifications. There remains then the obligation on the part of the power companies and of the entire electrical industry to carry the true story to the mass of the people, that the states of California and Washington may not be Russianized.

CURRENT COMMENT



The publicity of the California State Water and Power League, the organization which is sponsoring the Water and Power Act, is causing much comment in the press of the state. In but

Water and Power Act Publicity Arouses Comment few places is it meeting with approval and those journals which accord it space in their columns are either labor papers or are markedly radical in their leanings. Under the heading "Corporations and Their Men," the Santa Barbara (Calif.) Morning Press points out some of the weaknesses in one of the latest bits of propaganda which has been sent out by the league. The editorial follows:

The California State Water and Power League, organized to conduct the campaign in behalf of the proposed state water and power act which will be on the ballot next November, already has its publicity department going full blast and is bombarding the newspaper offices of the state with arguments in favor of the act. Some of these arguments are singularly effective in the direction intended by the league, and some seem to carry a "reverse English." For some time the league has been contrasting the salaries paid the chief executives of the big power corporations with those paid the governor and other high officials of the state. It points out that the president of the Pacific Gas and Electric Company and the president of the Great Western Power Company each receives a salary of \$50,000 a year and that the president of the Southern California Edison Company receives \$36,000 a year, while the salary of the governor of California is only \$10,000 a year.

But isn't that a better argument for private ownership and operation of public utilities than it is for public ownership? The only argument on which private ownership has to stand is that it is more efficient than public ownership. If private ownership is the more efficient it is because the men at the top, those who control the great industries are more alert, have broader vision and are better administrators than the men placed in charge of publicly owned enterprises. And the one reason why the privately owned utilities are in the hands of the abler men is that the corporations pay better salaries than municipalities, states or the nation. Mortimer Fleishacker of the Great Western Power Company, Wigginton Creed of the Pacific Gas and Electric Company and John B. Miller of the Southern California Edison Company draw impressive salaries probably because the majority of the stockholders in these corporations are convinced these executives are worth the money they are paid.

Before public ownership can ever be an unqualified success the public will have to make up its mind to pay salaries large enough to attract and hold executives of the caliber of the executives in control of the private corporations.

And here is another good word for the big corporations from a radical source. The editor of the San Jose News, who is popularly supposed to salaam reverently three times in the direction of Leningrad every morning immediately upon arising, was one of the hundred guests the Pacific Gas and Electric Company took on a joy ride to its Pit River development in Shasta County and he confesses that after "eating the corporation food, drinking corporation lemonade and looking at the corporation scenery" he came home in a somewhat chastened frame of mind. He has many kind things to say of the "forward looking, intelligent men" who direct the affairs of that corporation and of their love for the institution

"which is genuine and profound," and he continues with this illuminating observation:

"It is really a wonderful organization. A man who would even dream of totally destroying such a splendid enterprise in human cooperation must be crazy; all the most radical person could possibly want to do, at bottom, is to arrange things so that such cooperation and organization would have still more opportunity to function for the good of the entire commonwealth. Whether such an arrangement can best be secured by having public ownership or regulating private corporations is a question for the future to decide; but the one big, important thing is that there shall be no senseless waste of the fine values already built up under private ownership—values social and political as well as financial. (Shucks, this sounds pretty conservative, doesn't it? We fear Franklin Hichborn will think the P. G. and E. lemonade has got in its deadly work.)"

What Mr. Burgess has to say concerning the P. G. and E. can be said with equal truth of the Southern California Edison Company, the Southern Counties Gas Company, the Southern Pacific Company and a score of other corporations in California. They have built up splendid organizations of men who have a boundless and beautiful faith in and loyalty to the companies they serve and a gorgeous pride in their work. These organizations represent values, intangible but nevertheless real, which should be preserved whether the verdict of the future is in favor of public ownership of utilities or regulated private ownership.

DISCUSSION



Engineer Presents Figures in Support of Los Angeles Aqueduct Grade

To the Editor:

Sir: The discussion by yourself and "Interested Engineer" of aqueduct grades, in your issue of July 15, seems to bring out the following essential facts, about which there can be no disagreement. That where the Los Angeles Aqueduct crosses the Antelope Valley to reach the Elizabeth Lake tunnel, a siphon 11 miles long with a maximum head of 400 ft. could have been substituted for the present conduit and siphon, which is 21 miles longer than the first named method of construction would have been; that as constructed the aqueduct delivers water a point 60 ft. higher than the long siphon would have done; that the 60 ft. gained by the present conduit makes possible the utilization of Fairmont reservoir; that the Elizabeth Lake tunnel is the outlet for this reservoir, and is situated so as to drain it, and utilize its full capacity; that the reservoir will have a capacity of 7,620 acre-ft. at the proposed flow line, and is now built to a capacity of 6,025 acre-ft.; that the tunnel is built to a capacity of 1,000 sec.-ft., and the aqueduct has only capacity for 420 sec.-ft.

Starting with these premises, I submit a tabulation of cost data derived from official sources, which shows that with the reservoir built to its full height, the excess cost of the aqueduct as constructed will be \$1,213,578. This takes into consideration the matter of grades only, and does not include the cost due to increased size of the tunnel. I confined my criticism in my first letter to your statement that "millions" had been spent to flatten the grade of the aqueduct for the benefit of the power, and the "Interested Engineer" missed my point, when he spoke of the extra size of the long tunnel, accounting for one of the "millions." The increased length has been taken care of in my tabulation of costs.

Detail of Estimate, 11-mile siphon at Antelope Valley as against present constructed line. Statement of Cost as constructed:

Howard Contract, 58,080 ft. open ditch @ \$14.30....	\$ 830,544
1,485 ft. tunnel 40.	59,400
Force Account, 87,766 ft. open ditch @ \$11.10....	974,202
21,794 ft. siphon	369,190
Total, \$2,233,336	

Estimate of 11-mile siphon across Antelope Valley:

21,794 ft. as above.....	\$ 369,190
36,286 ft. from 200-ft. to 400-ft. head, @ \$23 per ft.....	834,578

Figuring the life of siphon at 40 years, and money worth 4.5 per cent, compounded annually, and that it would cost 25 per cent more to replace the structure, than the first cost, on the item of \$834,578, it would be necessary to set aside \$177,721 as a sinking fund. This added to the first cost, as follows

177,721

Total, \$1,381,529

Cost as constructed	\$2,233,336
Estimated cost of siphon.....	1,381,529

Difference in cost, \$ 851,807

Cost of Fairmont dam to date.....	270,971
Cost of lowering tunnel to present grade, which means 600 ft. longer tunnel @ \$68 per ft.....	40,800
	\$1,163,578

Fairmont dam at elev. 3,031, 5 ft. below proposed full height, has capacity of 6,025 acre-ft. Capacity at proposed flow line is 7,620 acre-ft. Cost per acre-ft. to date is \$1,931.

Estimated cost to complete dam to full height.....	50,000
Total, \$1,213,578	

Cost of storage per acre-ft. based on full reservoir \$	1,591
Cost of Fairmont reservoir based on average of 8 reservoirs on aqueduct system, which when completed, will store 81,360 acre-ft. at an average cost of \$57.26 per acre-ft.....	\$ 436,321

Amount in excess of average cost of reservoirs, which Fairmont will cost

\$ 777,257

Amount furnished by Power Bureau.....\$177,293

Amount estimated to finish dam..... 50,000

\$227,293 227,293

Total amount spent by aqueduct to build aqueduct on present grade	\$ 549,964
---	------------

I find that the average cost per acre-ft. of storage for 8 reservoirs at the lower end of the aqueduct system is \$57.26. Applying this average as a credit to the extra cost charge shown above, with 7,620 acre-ft., we have a total credit of \$436,321 for its reservoir value, leaving a net charge of \$777,257, which possibly should be assumed by the power branch of the aqueduct. I find three-quarters of a million where you talked in "millions."

I am sure that all engineers will agree that the aqueduct was designed and built to give the highest efficiency both for water and power; that honest men can disagree as to the proper allocation of costs as between water and power, and it comes down to a matter of accounting and of opinion.

GEO. R. SHUEY,

Assistant Engineer, Department
of Public Service, City of Los
Angeles.

Independence, Calif.
July 31, 1924.

Story on Sacramento Steam Plant Recalls Old Memories to Engineer

To the Editor:

Sir: It is interesting to note in your issue of July 15, 1924, a description of the record installation of additional power capacity in the plant of the Pacific Gas and Electric Company, Sacramento, Calif., by Clotilde Grunsky.

The writer is particularly interested in this article as he was connected with the original installation of the Sacramento Gas & Electric Railway Company, both at Folsom and Sacramento under G. E. instruction and observation.

For the railway we were then getting steam power from the Capital Gas Company. The railway company owned the electrical equipment.

As soon as our substation was completed, it was necessary to make a quick transfer of the electrical apparatus to prevent as little interruption to service as possible. This was done between 12 midnight and 7 a.m. the same morning, we having elsewhere erected a temporary plant to prevent curtailment of the entire service.

In one week from the time this transfer was started, we were giving full car service from our own plant.

The city arc light system was transferred to us and this was completed and in operation in 30 days from the day of placing the order.

It is gratifying what results can be obtained by proper cooperation and understanding, and I am pleased to know that the Pacific Coast maintains its record.

In addition to the above we had an "Electrical Carnival," created by the citizens in view of the incoming power, which was carried through to success due to the high type of G. E. apparatus even in those days.

T. A. W. SHOCK,

Construction Engineering Dept.,
General Electric Company.

Schenectady, N. Y.
July 29, 1924.



CENTRAL station energy has greatly simplified the work of the Utah coal miner by speeding up the mining and grading processes. Such devices as the electric engine, capable of hauling sixty loaded coal cars, have taken the place of the mine mule. Other operations have also been electrified.

Central Station Energy at Work in Utah Coal Mines

By M. L. Cummings, Jr.

THE coal mines of Utah, most of which are located in Carbon and Emery Counties, represent a large proportion of the state's resources. In the mining of the product of these mines electric power, purchased from a central station, has brought about greater efficiency, reliability and economy than can be obtained through any other method of operation. This is clearly demonstrated by the fact that practically all of these coal mines purchase electric power, even though they have an unlimited supply of cheap fuel at hand which could be used in operating their own steam generating plants.

The power is generated at various hydroelectric stations on the Utah Power & Light Company's system in the states of Utah and Idaho. A large portion of this energy is transmitted from Idaho to the power company's Terminal substation, near Salt Lake City—a distance of 130 miles. At Terminal it is stepped down to a lower voltage and again transmitted to another substation at Helper, which is the center of distribution for the coal mining territory. The distance from Terminal to Helper is about the same as from the power company's main generating plants to its Terminal substation.

A total of fifteen producing coal mines in the Carbon and Emery County districts are now using purchased electric power in their operations. They are as follows:

- Cameron Coal Company
- Carbon Fuel Company
- Independent Coal & Coke Company
- Kinney Coal Company
- Liberty Fuel Company
- Lion Coal Company
- Peerless Coal Company
- Spring Canyon Coal Company
- Standard Coal Company
- U. S. Fuel Company (Hiawatha Mine)
- U. S. Fuel Company (Panther Mine)
- Mutual Coal Company
- Utah Fuel Company (Castle Gate Mine)
- Utah Fuel Company (Utah Mine)
- Utah Fuel Company (Sunnyside Mine)

Three Reasons for Purchasing Power

There have been three principal reasons why the greater proportion of the Utah coal mining companies have deemed it advisable to use central station energy. In the first place, they have realized

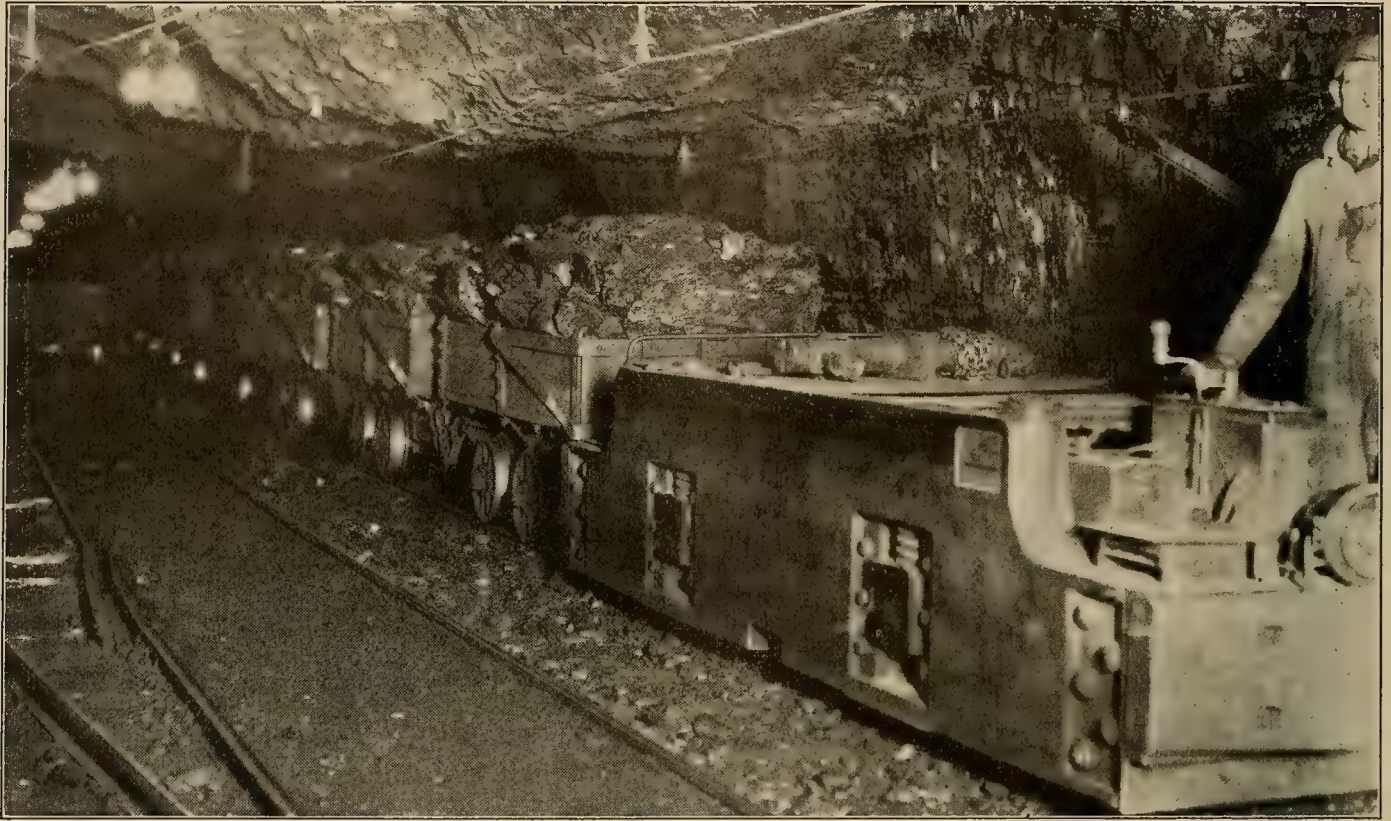
***E**LECTRICITY has played an important part in the development of Utah's coal mines. To the casually informed person it would seem that the mining company, with a large supply of cheap fuel, would be in an excellent position to generate its own electric power. That such is not the case, as is shown by the fact that the majority of the producers purchase energy from a central station, is brought out, together with the operators' reasons for relying upon utility company service.*

that the primary object of any business is to prepare a product for the market in the most efficient and economical manner possible, and secondly, they have seen the advantage of eliminating all operations that do not contribute directly to the success of the business. The generating of power is not a part of the coal mining company's business and for this reason the central station has been called upon and energy is purchased at a very low cost per ton of coal mined.

The money which would have necessarily been invested by the consumer in power plants to generate his own power, is free to be used in the actual mining



Drilling hole for blast charge in wall of solid coal.



Electric locomotive with train of loaded cars ready to be taken to the surface. These locomotives will haul from 50 to 60 cars of coal.

of coal and is made to work with the other capital. Also the working organization of the coal mine is enabled to put its entire efforts into the production of coal, and need not divert a portion of its force to engage in another business with which it is not in any way allied.

The third factor favoring the purchase of energy is the fact that the demand for power in a coal mine rapidly increases as the operations become more extensive, and more power is required for haulage, cutting and ventilation. Such additional power is immediately available from the central station, at relatively small expense, where the mine is operated under purchased power, whereas the consumer that is attempting to supply his own power requirements is confronted at regular intervals with the necessity of increasing his investment in his power plant in order to take care of his growing load.

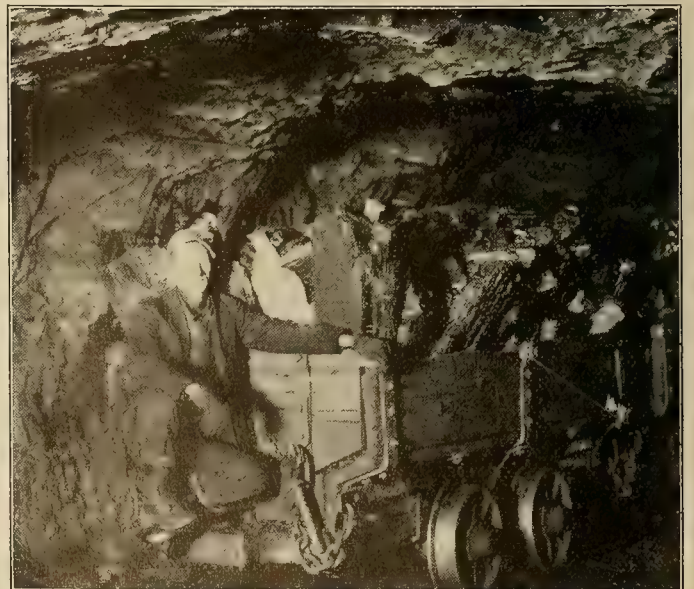
Under the coal mining laws of the State of Utah, the mining of coal would be impossible without electric power. Present limitations as to the method of mining are such that the use of mining machines for cutting the coal is absolutely essential, and the use of electricity for firing the shots to break down the coal is necessary.

Equipment Used in Utah Mines

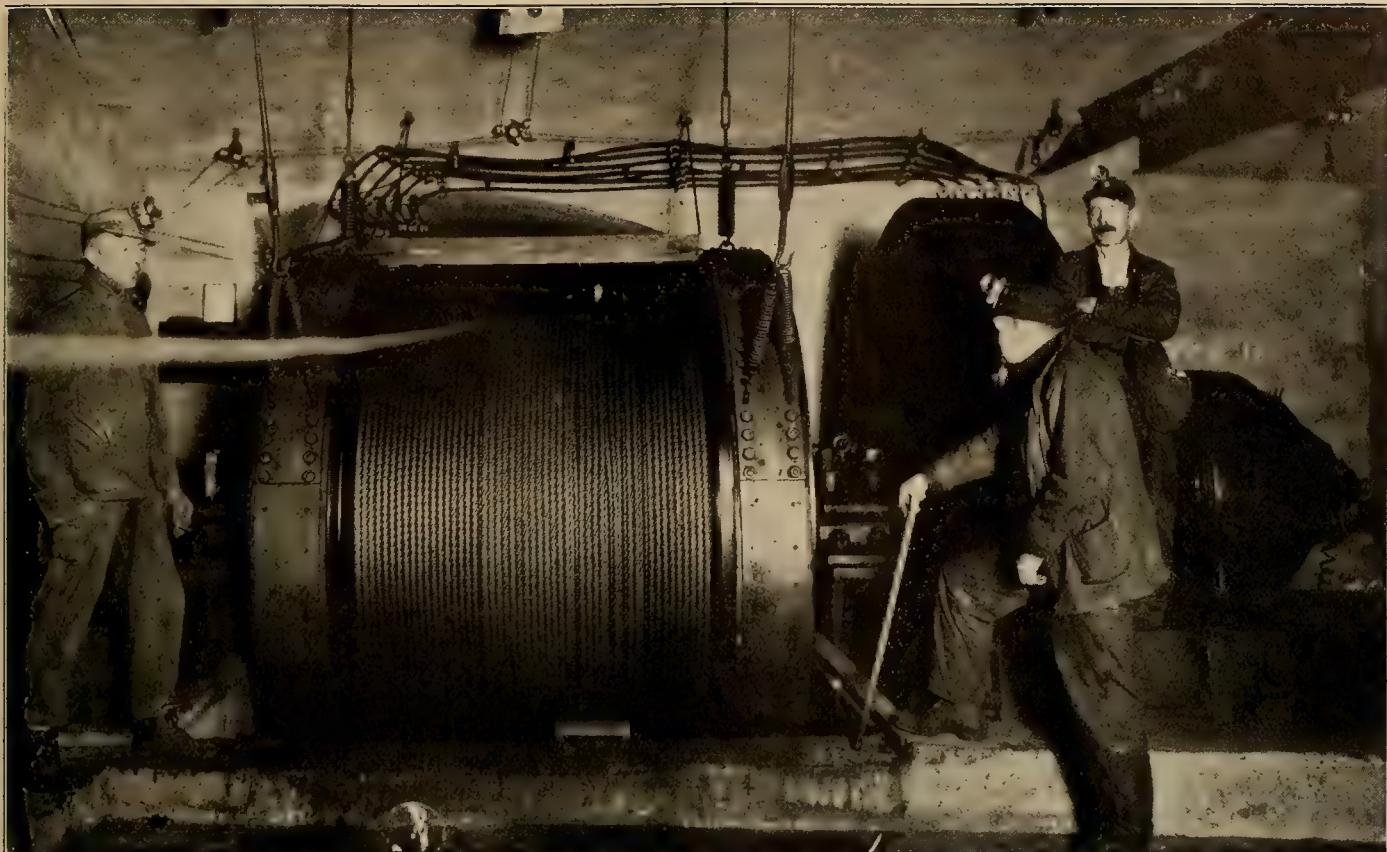
The method of using mining machines and their construction vary somewhat with the type of coal and the thickness of the seams, although in most of the Utah mines a cut is made under the coal near the bottom of the seam. The cut extends across the face of the coal 6 or 8 in. wide and 6 ft. into the seam. This method of mining makes it possible to

break down the coal with the minimum amount of slack coal resulting. This procedure is used in mines where the seam of coal is not too thick. Some of the mines in Utah have very thick seams of coal, one in particular having a seam practically 22 ft. thick. In this type of mine a different mining machine is used. It is so constructed that a cut across the face of the coal, similar to the one described above, is made 7 or 8 ft. from the floor.

Some of the coal mines in Carbon and Emery Counties receiving purchased electric power have



Coal cars being hoisted up an incline preparatory to being hauled from the mine to the portal by electric locomotive.



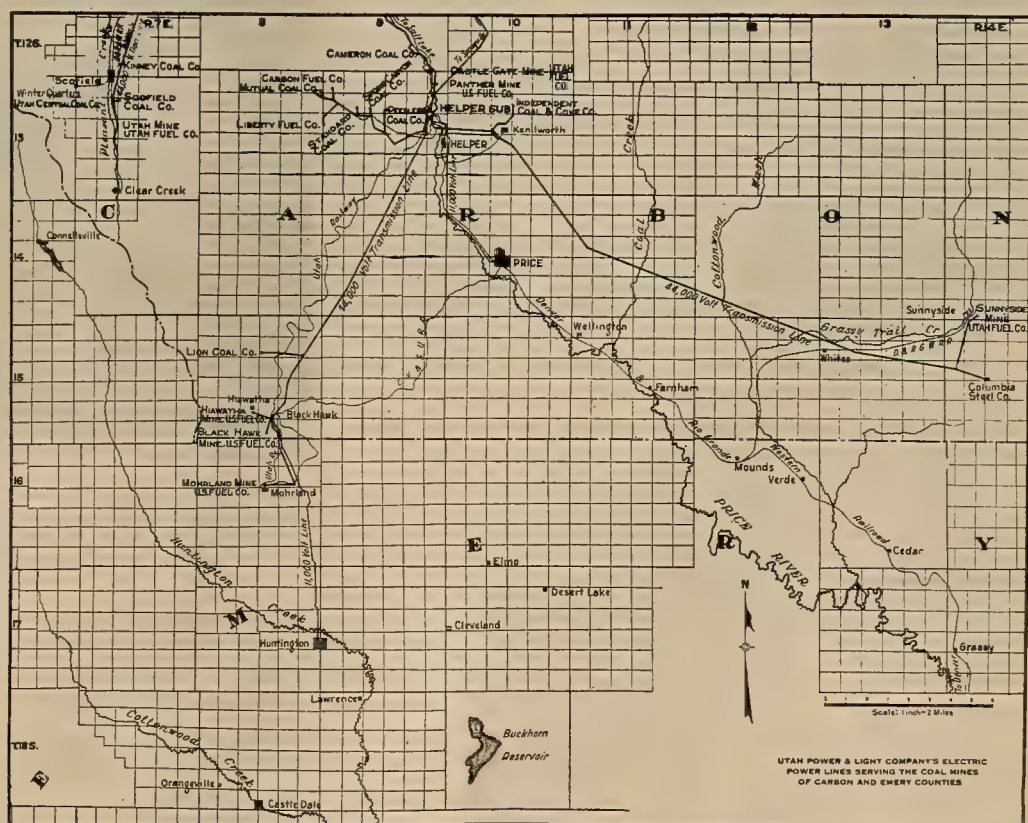
Underground electric hoist in the Utah Fuel Company mine at Castle Gate, Utah.

been operating for a number of years and the underground workings extend over a large territory. This results in the requirement of an enormous amount of fresh air for ventilating the mines. A large amount of ventilating equipment is installed in each mine and the fans are electrically driven. The long distances within the mines also make necessary the transportation of the coal inside the mines by trains of cars drawn by electric locomotives.

The coal found in Carbon County usually lies in comparatively flat seams from 7 to 20 ft. in depth, the plane of which, in general, dips 7 to 15 deg. to the horizon. Coal is usually found outcropping on the side of a mountain and the method of mining is to follow the vein or seam of coal along its dip into the side of the hill. This means that some mines must necessarily hoist their coal up the incline of the seam to the surface, and in others the loaded cars may be dropped from the seam if the mine has been opened on the lower

side of the dip. Mines of this latter character use a considerably smaller amount of power than the mines which require the hoisting of the loaded cars.

It has become the custom of coal mining companies in Utah to prepare the coal as it is mined, into a number of classifications for the market. These



Map showing transmission lines of the Utah Power & Light Company in coal mining district.

classifications include slack, various kinds of pea and nut coal and various sizes of lump coal. This means that all coal coming from the mines must be screened and graded. The classification is done in a tippie which consists mainly of a series of screens with different sized meshes. These screens are set on an angle and vibrate in such a way as to roll the coal as it moves down the screens. The coal is dumped from the mine cars onto these screens and the desired classification is made. These tipples use a considerable amount of electric power in their operation. One tippie in the Carbon County district is so equipped that coal may be dumped and graded into five classifications and loaded on the cars in one

operation. The loading of cars is done mainly by conveyors, although the loading of box cars requires a certain type of coal loader and electric power is used for its operation.

During the year 1923 there were 4,485,422 tons of coal mined in Utah, of which 3,419,455 tons, or 76.4 per cent, were produced by purchased electric power, with an average consumption of about $5\frac{3}{4}$ kw-hr. per ton of coal mined.

In taking advantage of the efficiency, reliability and economy of purchased electric power, the coal mining operators of Utah are keeping step with the progress being made in other lines of industrial activity throughout the state.

Specializing in Retail Merchandising

By Clotilde Grunsky

IT has become a traditional thing in the electrical industry for the electrical dealer to have a side line. The reason for this is no doubt the fact that the turnover on electrical goods and the margin of profit offered are not so great that he feels satisfied with the business done in the electrical appliance field alone. The question then arises, what shall it be?

Traditionally, he is supposed to go into the electrical contracting business. Because of his interest and knowledge of electricity, it is assumed that he will of course be prepared to wire homes and office buildings with the success which comes with a special gift for that sort of thing. The matter is also supposed to work conversely, so that the electrical contractor takes up the selling of home equipment to round out a career which likewise held insufficient profits for a livelihood. There was some sort of theory that the profits on one end of the business would fill up the valleys on the other—but there was no unanimity of opinion as to which field furnished the profits.

It is safe to say, however, that a man usually succeeds best in that line of endeavor in which he is interested—and that if his contracting business was added only as an afterthought and if he regards it only as a necessary evil, it will profit him little. The same is equally true of the dealing end of the business when undertaken by a man whose every training and interest centers about the wiring jobs which his firm is handling or about to secure.

The distinguishing feature of the electrical dealer as against the electrical department, as it is sometimes conducted in the hardware, drug or department store, is undoubtedly the fact that the electrical dealer does understand the subject of electricity—he knows the technical side of the goods he sells and he can service them properly when they later require repair or replacement. This is an essential feature to good electrical salesmanship and is the argument for the particular support of the specialty as against the non-specialty avenues of distribution. The second requirement for successful salesman-

ship—and one quite as important as the first—is a thorough knowledge of merchandising principles. And here it is that the hardware man and the department store head sometimes have the advantage over the electrical man. When you do have a man who combines a technical knowledge of the field with a liking for sales technique, the result is a gift of the



Exterior of the F. O. Lantz Company store at Long Beach, Calif. Note the display of refrigerators in the left hand window. The effect is secured by having the display window floor and the store floor on the same level.

goods and the man should not be discouraged in any way because he may not be complicated by a desire to be an electrical contractor.

Other storekeepers do not have to supplement the earnings of their business by growing the flowers they sell—or building garages to house the automobiles upon which they get their commission. Why should the electrical merchant, if he really be one,

not stand or fall by his success in his own recognized business of selling? And if it be true that he finds it difficult to make both ends meet on the margins and the turnover possible for electrical appliances in his district, would it not be more logical, rather than to go into contracting, to add other lines to those he carries, making a specialty of gas appliances or hardware or furniture, just as the hardware store and the furniture dealers have in their turn made specialties of the electrical appliance?

F. O. Lantz, of the F. O. Lantz Company of Long Beach, Calif., has worked out a philosophy along somewhat these lines—and has started a fashion which has had numerous followers. His store is one of the most progressive in the southern California district of progressive and attractive stores. It is located on the main street of Long Beach and is a dealer's establishment pure and simple. Mr. Lantz is not in the contracting business. His interest is in the merchandising side of the game and he sees no more reason why he should undertake the wiring of houses than why he should open an electric bakery and waffle kitchen. He believes that the man whose real interest is not in the contracting end of

house-to-house canvass, can sell his goods to the household consumer irrespective of his location. The fixture business is a field all to itself. It requires a special type of display and store arrangement and, if it is to amount to anything, must include a complete stock. This means considerable capital investment and a special effort to merchandise this particular line of goods. Radio, for similar reasons, has come under the same ban.

New Lines Used to Stimulate Entire Business

The margin on lamps and the smaller electrical appliances which remain to make up the backbone of the business, however, is proverbially small and the turnover of necessity limited. What remains to meet the rent of a store in the main business district of town? In order to increase the diversity of materials carried and to bring people into the shop, and also because he felt that it was a logical combination, Mr. Lantz first added a line of gas heating and cooking appliances.

From time to time, he has added other features of household equipment, thus reversing the process of the furniture and hardware stores which have



General interior view of the F. O. Lantz Company store. Gas appliances are displayed in a separate room in the rear and are not mixed with electrical devices.

the business will make a poor job of supervising his men in the field. And he believes that if the work does not really represent himself, there will develop all kinds of "grief" and that it were better not entered into in the first place.

For the same reason, he has not gone extensively into the heavy appliance business, nor into the electrical fixture business at all. He regards both of these as specialty lines, better handled as independent work in their own right. The man who features electric washing machines and vacuum cleaners, for instance, can best establish himself on a side street, and with newspaper advertising and

added electrical equipment as a side line to their particular line of goods. This material allows a good profit to the merchant, it has an excellent turnover and it brings people into the store. Mr. Lantz has kept accurate record of sales before and after adding the gas appliances, and it is interesting to note how sales in the purely electrical goods increased immediately upon this addition to the stock and have maintained their higher level ever since.

The gas appliances are not mingled with the electrical equipment on the floor. In making a sales argument for an important appliance in either the electrical or gas field, it is sometimes distracting to

have a diversity of objects about, which catch the eye of the purchaser and divide the attention. In consequence a separate sales room for gas equipment has been added in the rear of the store. Customers will thus have a full opportunity to view the electrical equipment in entering and going out, but will still be allowed to concentrate on the gas equipment while that is being sold. On the other hand, the ornamental glassware, candlesticks and small articles of attractive appearance, calculated to attract passers-by into the store, are placed well to the front of the salesroom.

Store Is Arranged to Fit Circumstances

Mr. Lantz has given much thought to the general arrangement of his store in order that the customers may realize that the company is supplying up-to-date merchandising service to its patrons. To develop this impression he has endeavored to arrange his stock so that every piece of merchandise will have a definite place that will give it the best display possible. In making this arrangement the smaller devices are shown in cases located on the side walls of the store and the larger devices are placed in an orderly fashion down the center of the room. Wherever possible, the devices with metal fittings are kept in cases fitted with glass doors. This plan has been found to be particularly well suited to Long Beach as the salt air is thus kept from coming in contact with the metal fittings on such devices as percolators and toasters. Lamps and socket devices are kept in their original cartons and are neatly piled on shelves behind the main counter. Cartons that do not readily adapt themselves to display in the main part of the store are opened and their contents removed to heavy cardboard boxes that can be kept in a set of shelves designed to receive them.

Various ideas in store arrangement have been adopted which add greatly to the attractiveness of the store and at the same time help to sell goods. A well designed fireplace with home furniture is the central feature of a rest corner where a demonstration may be pleasantly conducted. Show cases, counters and shelves are arranged with taste and care. This store was one of the first to introduce the graduated lamp rack for the display of different types of lamps. In fact, the design of the particular layout invented by Mr. Lantz has been copied by one of the national manufacturers and spread broadcast throughout the country. In similar fashion, he was the first to adopt the use of a pyramided case of open box drawers used under the ordinary glass case for the display of small accessories. This design permits of the protection of the material from dust and tarnish and at the same time the complete display of the goods so that the customer may ask for an unfamiliar article without having to flounder about for words. At the same time, by sliding the tray back from its support like a drawer, it is easy to reach all materials from the rear of the case. This stand has also been copied very extensively in California electrical stores.

The store windows are given the attention they deserve. Recognizing the importance of light in windows and the effectiveness of color effects, the

trough for the reflectors has been built into the window itself with a square frame into which the color screens may be inserted at will. One of the difficulties of most window displays is the fact that objects of different heights and sizes must be displayed in the same space. The floor of the usual show window is particularly designed for the exhibition of smaller objects and as a rule is somewhat inconveniently placed when full-sized furniture is



The counter holding flower vases and candlesticks is adjacent to that containing small electrical fittings and necessities.

to be used. The ordinary dining room table, for instance, is too high when placed in such a window and does not permit of the best display of the objects upon it. The same objection is to be made in the case of the gas ranges and similar bulky appliances, which Mr. Lantz desires to have always on display somewhere in his windows, but which stand too high from the floor to bring their surfaces at the most effective visual level.

In order to obviate this difficulty, Mr. Lantz has floored one side of his display window only. This window has a partition across the rear and is in every way adapted to the display of small appliances to the best advantage. It is usually devoted to electrical equipment and small glassware.

On the other side, the window is not specifically enclosed, but is a corner of the shop, as it were, with the floor at the level of the main sales floor and without rear partition. Here are displayed gas ranges, refrigerators and other of the larger appliances. In spite of the narrow space allotted, they do not appear crowded and their surfaces, coming below the level of the eye, receive more favorable attention than would be possible otherwise.

The experiment of combining different lines of household goods with electrical equipment has been a success from the start. The electrical department still holds the center of interest and provides from 60 to 70 per cent of the sales, varying with the time of year. It is Mr. Lantz's particular interest and he has watched it grow, under the stimulus of the new custom brought to the shop through the other departments, with satisfaction. He still regards himself as a specialist, if not in confining himself to one line of goods, at least to one line of endeavor. He is a specialist in store merchandising.

Regional Review of the Power Resources for the Pacific Coast States*

By A. H. Markwart¹ and H. A. Barre²

THE hydroelectric resources of the three Pacific Coast states constitute 43 per cent of the water power of the United States, and under economic development will produce 104 billion kw-hr. annually. Less than 10 per cent of this is developed. The total is sufficient to supply a population of 23 millions under a consumption of 5,000 kw-hr. per capita, which is nearly five times the present use. The growth of load for this region during the past decade has been 10 per cent per annum, which is 3.5 times the rate of growth of population. California heads the United States in hydroelectric output.

Historical

The early development was non-industrial; therefore power was not urgently needed. Steam generated power was early used for urban lighting. Fuel oil has great industrial value, and has been largely utilized, but will never supplant hydro power.

Hydroelectric power development was the natural outgrowth of the hydro-mechanical power of the West. The growth in size of units and distance and voltage of transmission has since been phenomenal.

The first hydroelectric plant was constructed on the Willamette River, Ore., in 1889, with a 13-mile transmission at generator voltage. The Pomona plant in California, built in 1892, was the first long distance transmission with a stepped-up voltage. The Mill Creek No. 1 plant, near Riverside, Calif., in 1893, was the first polyphase transmission, and used 10,000 volts. The 142-mile Colgate line, in 1901, transmitted at 60,000 volts.

The general topography, dominated by various mountain ranges in excess of 10,000 ft., which materially influence precipitation and storage, is favorable to power development.

The remoteness of these mountain power sources made the development of high voltage transmission essential. With growth the amalgamation of small companies into larger systems resulted. This consolidation influenced the standardization of frequencies, the predominating being 60 cycles, which will doubtless be generally accepted throughout the United States.

Large Systems

The largest system in the West is that of the Pacific Gas and Electric Company with 3,492 circuit miles of transmission at voltages ranging between 30 kv. and 220 kv., fed by 474,550 kw. of plant

capacity serving 311,615 consumers, residing in over 54,000 square miles of territory.

The next largest is the Southern California Edison Company with 2,072 circuit miles at similar voltages, supplied by 497,800 kw. of installed plant capacity.

Interconnection

Interconnection of systems throughout the Pacific Coast has been an established fact for a number of years. This permits the fullest utilization of water resources, reduces the amount of auxiliary steam and reserves to a minimum, and takes advantage of load diversity at the peak. The early motive for interconnection in California was, however, the desire to secure a market.

During the past two years the interconnection of the entire Pacific Coast has been effected, except for two small gaps, one of which is now being closed. With the closing of the last gap, a total of 1,867,485 kw., having a total annual output of 6,900 millions of kw-hr., will be interconnected.

In California there are 30 points of interconnection, none, however, in excess of 66,000 volts, the largest transfer being 25,000 kw. The Pacific Gas and Electric Company and the Southern California Edison Company furnish better examples of fully developed interconnections within their own systems.

The states of Oregon and Washington have also made notable strides in development and interconnection, as is indicated by the 1923 report of the Pacific Northwest Super-Power Committee.

The Pacific Coast interconnected system should not be understood as a superpower system. What actually exists is a physical interconnection of utility systems whose function is to dispose of surplus power, until load growth withdraws the surplus from the market.

Superpower cannot mean great reduction in cost of power to the consumer, since so much of the cost is in distribution and conduct of the business, but it will delay the inevitable increase in cost, as fuel becomes more expensive, and poorer power sites have to be developed.

No interconnection will exist without economic reasons or benefits to the consumer. When the benefits increase, the funds will be made available for larger interconnection.

The interstate power business is very small at present, but it will be tremendously increased by the development of the 3,500,000 hp. on the Colorado River, the largest sites of which are in Arizona. The international business over the Mexican and Canadian boundaries is also small.

There are no legal inhibitions nor embargoes against interstate or international business, the ma-

¹Vice-president in charge of engineering, Pacific Gas and Electric Company, San Francisco, Calif.

²Executive engineer, Southern California Edison Company, Los Angeles, Calif.

*Excerpts from a paper before the World Power Conference, London, England, June 30-July 12, 1924.

TABLE No. I.

AREA, POPULATION, HYDRO RESOURCES
AND
PER CAPITA CONSUMPTION OF ELECTRICITY
FOR PACIFIC COAST STATES

Item	California	Oregon	Washington	Total	New York
Gross Area, Sq. Mi.....	158,297	96,699	69,127	324,123	49,204
Land Surface, Sq. Mi.....	155,652	95,607	66,836	318,095	47,654
Population:					
1900.....	1,485,053	413,536	518,103	2,416,692	7,268,894
1910.....	2,377,549	672,765	1,141,990	4,192,304	9,113,614
1920.....	3,426,861	783,389	1,356,621	5,566,781	10,385,227
Inhabitants per Sq. Mi.:					
1900.....	9.5	4.3	7.8	7.6	152
1910.....	15.3	7.0	17.1	13.2	191
1920.....	22.0	8.2	20.3	17.5	218
Hydro Resources:					
Average hp.....	5,500,000	4,500,000	6,000,000	16,000,000	1,400,000
Millions kw-hr. per annum.....	36,000	29,000	39,000	104,000	9,150
Hydro Production—1923:					
Millions kw-hr.....	4,120	422	1,358	5,900	3,561

terial laws of trade functioning freely. The active demand within the state discourages interstate sales. The economic aspects are not unlike those governing the commerce in coal or other fuel.

Character of Load

On the 4,400,000 hp. of connected load on the 8,100 circuit miles of the California-southern Oregon interconnected system in 1923, 36 per cent was lighting, heating and cooking, 25 per cent was industrial, 15 per cent agricultural, 8 per cent railways and 16 per cent miscellaneous. The annual growth of connected load has been 10 per cent per annum during the past decade.

The saturation point is far off, since the Pacific Coast failed to manufacture sufficiently for its 5,566,000 population, by some \$160,000,000 in 1919. New uses are constantly being found in the metallurgical, chemical, heating and transportation fields.

Regulation

In the West, as in most other parts of the United States, the power business is a monopoly within the area served by each utility company, regulated by state authority. The utility company carries the obligation to render good service and conduct its business in accord with sound business judgment. On the part of the regulatory body, the law requires that rates be granted to the utility company sufficient to meet reasonable operating expenses, depreciation and a fair rate of return on the capital invested by the utility used and useful in public service.

With the increase of transmission voltage and the resulting greater distances over which it is possible to transmit electric energy, interstate power in larger magnitudes will be accomplished, especially in those regions of the United States where concentration of water power in great volume exists.

TABLE No. II.

ANNUAL PRODUCTION OF ELECTRICITY BY PUBLIC UTILITY
POWER PLANTS IN THE UNITED STATES IN 1922

Based on Records of Division of Power Resources U. S. Geological Survey together with Population and Kw-hr. per Capita.

State	Produced by Water Power			Produced by Steam			Total Thousands of kw-hr.	Per Cent of U. S. Total	Popu- lation 1920	Kw-hr. per Cap- ita
	Thousands of kw-hr.	Per Cent of State Total	Per Cent of U. S. Total	Thousands of kw-hr.	Per Cent of State Total	Per Cent of U. S. Total				
California.....	3,776,998	86.2	21.95	602,705	13.8	1.98	4,379,703	9.19	3,426,861	1280
Illinois.....	191,827	5.5	1.15	3,291,105	94.5	10.81	3,482,932	7.31	6,485,280	535
Indiana.....	49,263	4.6	0.29	1,027,681	95.4	3.37	1,076,944	2.26	2,930,390	370
Iowa.....	629,943	60.4	3.66	412,010	39.6	1.35	1,041,953	2.19	2,404,021	435
Massachusetts.....	361,147	19.5	2.10	1,488,764	80.5	4.89	1,849,911	3.88	3,852,356	480
Michigan.....	692,122	31.7	4.02	1,487,822	68.3	4.89	2,179,944	4.57	3,668,412	595
Minnesota.....	342,480	43.5	1.99	445,109	56.5	1.46	787,589	1.65	2,387,125	330
Missouri.....	29,250	3.4	0.17	841,776	96.6	2.76	871,026	1.83	3,404,055	255
New Jersey.....	2,003	0.2	0.01	1,110,435	99.8	3.64	1,112,438	2.33	3,155,900	350
New York.....	2,951,818	39.8	17.15	4,468,960	60.2	14.68	7,420,778	15.57	10,385,227	715
Ohio.....	30,937	1.0	0.18	3,011,951	99.0	9.89	3,042,888	6.38	5,759,394	530
Oregon.....	365,273	71.2	2.12	147,531	28.8	0.48	512,804	1.08	783,389	655
Pennsylvania.....	497,471	11.0	2.89	4,031,193	89.0	13.24	4,528,664	9.50	8,720,017	520
South Carolina.....	814,431	93.7	4.73	54,337	6.3	0.18	868,768	1.82	1,683,724	515
Texas.....	3,285	0.4	0.02	813,507	99.6	2.67	816,792	1.71	4,663,228	175
Washington.....	1,209,326	94.1	7.03	76,299	5.9	0.25	1,285,625	2.70	1,356,621	950
West Virginia.....	24,022	1.8	0.14	1,327,416	98.2	4.36	1,351,438	2.84	1,463,701	925
Wisconsin.....	499,921	45.6	2.90	594,541	54.4	1.95	1,093,562	2.29	2,632,067	415
Other States.....	4,735,848	47.6	27.50	5,219,397	52.4	17.15	9,955,245	20.90	36,548,852	270
United States.....	17,206,465	36.1	100.00	30,452,539	63.9	100.00	47,659,004	100.00	105,710,620	450

PRODUCTION IN 1923

California.....	4,119,542	82.0	.....	922,100	18.0	.....	5,041,642	.....	3,426,861	.....
Oregon.....	422,561	71.0	.....	172,762	29.0	.....	595,323	.....	783,389	.....
Washington.....	1,357,757	94.0	.....	88,166	6.0	.....	1,445,923	.....	1,356,621	.....
Pacific Coast.....	5,899,860	.....	.....	1,183,028	.....	.....	7,082,888	.....	5,566,871	.....
New York.....	3,560,752	41.0	.....	5,156,151	59.0	.....	8,716,903	.....	10,385,227	.....

Federal control has been limited to the administration of the Water Power Act, under which licenses are granted to develop power on navigable streams and federal power reserves. Interstate power business on a large scale may bring with it a greater degree of federal regulation.

But, federal regulation of interstate business, if it must come with growing superpower, is, with private control of the general regional power supply, more in the public interest than municipal or state ownership of separate power supplies. Either of these tendencies is a step backward, and is inimical

have functioned freely under public ownership of the character described, must not be suppressed, for these attributes have promoted progress in the electric power industry which have been in the development stage since its inception, and placed it in the enviable position it enjoys in the United States today.

Finance

The task of finding funds for the development of the immense water power resources of the Western states is not one which concerns only a few power company executives.

TABLE No. III.

OUTPUT IN KW-HR.
AND
GROWTH OF LOAD FROM 1920-1923
FOR
CALIFORNIA, OREGON AND WASHINGTON*

	California	Per Cent Increase	Oregon	Per Cent Increase	Washington	Per Cent Increase	Total	Per Cent Increase
1920.....	3,735,645	....	475,543	....	1,196,725	....	5,407,913	....
1921.....	3,982,938	6.6	468,534	-1.5	1,176,662	-1.7	5,628,134	4.1
1922.....	4,379,703	10.0	512,804	9.4	1,285,625	9.3	6,178,132	9.8
1923.....	5,041,642	15.0	595,323	16.0	1,445,923	12.5	7,082,888	14.5
Total increase.....	1,305,997	35.0	119,780	25.1	249,198	20.8	1,674,975	31.0
Annual increase.....		10.5		7.8		6.5		9.5

*Data from United States Geological Survey reports.

to the growth of interconnection, which is the prime essential of superpower. Municipal ownership in principle is opposed to state superpower, while on the other hand state superpower tends to promote agitation for state ownership through agencies antagonistic to the institution of private property. Government ownership in this form is equally undesirable if there is to be a universal power supply and a free flow of power without regard to state boundaries.

What is really best, and what is in operation is ownership by the public, of the stocks and bonds issued by the regulated utility companies, these securities being held in relatively small amounts by great numbers of people. The principal gas and electric companies operating in California have in excess of 100,000 stockholders which is public ownership of a character that permits securing of all the known advantages of private operation. Interstate business in power which has been so easily carried on under private action through the kind of public ownership of utilities which exists, will be rendered impossible under municipal or state ownership of power supplies. Unhampered by state interference, interstate superpower will develop to meet the demand of interstate business, and in time may bring federal regulation, and to some it will suggest national ownership.

Interstate power retards state ownership, and even with the possibility of federal regulation, it should go forward to the extent that is required to meet the trade in power. Under private ownership alone, interstate power systems will develop, and power will be supplied to all users wherever situated, as active demand arises therefor. This has been the situation in the past, and there is no reason to believe but that the demands of the future will be met with equal success. Initiative and individualism which

When it is stated that a billion dollars will be expended in hydroelectric construction in the states west of the Rocky Mountains in the ensuing ten years, of which \$500,000,000 is to be spent in California alone, the figures are so large that the mind can hardly grasp their real significance; the statement, however, of the amount to be expended by California power companies may give a better perspective of the vital significance of this program to the electrical industry; and these figures, of course, are only a fraction of the increased business which will inevitably follow the growth of industry and population naturally consequent upon the creation of large additional quantities of hydroelectric energy.

It is no mere figure of speech, therefore, to state that the utilization of the inexhaustible energy now running to waste in the streams of the country is a matter of national concern.

The program of California's power companies, anticipating the expenditure of one-half billion dollars by the close of 1934 in the intensive development of her splendid hydroelectric resources, is the most comprehensive of any state in the Union.

Broadly speaking, there are only two methods by which capital funds may be secured by public utility companies, namely, from surplus earnings and from the sale of securities. It is impossible to realize from the earnings of electric utilities a sufficient sum to finance more than a small proportion of a construction program of the character here involved.

This means of providing for extensions is possible in the case of a large number of industries which are able to handle a considerable volume of business with a comparatively small investment, many concerns being able to turn over their invested capital several times a year. In the public utility business, however, the proportion of invested capital required to produce a given volume of earnings is

perhaps greater than in any other line of industry. It is a general rule that even the most conservatively financed hydroelectric companies are compelled to invest \$500 in plants and transmission and distribution systems, etc., to yield a gross revenue of about \$100 per annum. And in many cases the ratio of capital to income is higher than this.

It is true, however, that utility corporations plow back into their properties a substantial portion of their earnings each year through the medium of sinking fund payments, and depreciation and other reserves; but the bulk of construction funds must necessarily be obtained from the sale of securities.

Sale of Securities

Investors in corporate securities are of two classes:

(a) Stockholders who purchase an actual share in the company's business, and become partners in the undertaking.

(b) Bondholders who loan money to the company for a definite period of time, at a fixed rate of interest, their principal and income being secured by mortgage upon the company's property.

A corporation with a well-balanced financial structure usually issues both bonds and stock; bonds because on account of the security of the offering, money may be borrowed at comparatively low rates of interest; and stock, because the greater the amount of capital secured from the sale of this class of security, the larger will be the equity behind the bonds, and hence the lower will be the interest rate which must be paid to secure funds from the sale of bonds. It seems pretty generally agreed that the

most economical method of securing capital for the conduct of a growing concern is to obtain from 55 to 65 per cent of the necessary funds from the sale of bonds, and the remainder through stock sales.

Limitations Upon Issuance of Bonds

While the issuance of bonds secured by mortgage upon physical properties is undoubtedly the cheapest method of securing funds, there are obvious limitations upon the issuance of this class of securities, and, generally speaking, the greater the restrictions placed upon the amount of bonds which may be issued, the better the security is regarded by investors, and consequently, the lower is the interest rate which has to be paid by the issuing corporation. Practically all the larger California hydroelectric companies have now adopted what is known as "open-end" or unlimited mortgages as being the most desirable and economical means of securing borrowed capital. The authorized amount of bonds which may be issued under these mortgages is made sufficiently large to cover the requirements of a number of years, and bonds are issuable from time to time in series bearing such rates of interest and dates of maturity as may be agreed upon at the time of issuance.

This form of mortgage is sufficiently elastic to cover changing financial conditions over a period of years, and has been adopted, substantially in similar form by the Pacific Gas and Electric Company, Great Western Power Company, San Joaquin Light & Power Corporation, The California Oregon Power Company and other utilities. Under the terms of the mortgage, the par value of bonds issued is limited to 75 per cent, or, in some cases to 80 per cent of

TABLE No. IV.

CALIFORNIA-OREGON-WASHINGTON-INTERCONNECTED SYSTEM
DECEMBER, 1923
Assuming gaps closed and interconnection completed

Company	Kw-hr. Output 1923 (In thousands)	Installed Capacity in Kw.		Plants under Construction (Kw.)	
		Hydro	Steam	Hydro	Steam
CALIFORNIA-SOUTHERN OREGON					
Pacific Gas and Electric Company	1,726,000	309,850	129,500	89,100	
Southern California Edison Company	1,470,000	277,200	94,850	41,000	70,000
Great Western Power Company	575,000	110,400	30,000	22,000	
San Joaquin Light and Power Corporation	465,000	82,850	54,050		
City of Los Angeles, Bureau of Light and Power	262,000	99,855			
Southern Sierras Power Company	206,000	41,375	9,450	17,700	
Los Angeles Gas and Electric Company	126,000		43,300		47,500
Western States Gas and Electric Company	109,000	7,080	4,650	20,000	
San Diego Consolidated Gas and Electric Company	77,000		32,200		
Snow Mountain Water and Power Company	48,000	6,400			
City of Pasadena	13,300		7,000		10,000
Ontario Power Company	10,200	1,700			
Utica Mining Company	9,700	2,275			
City and County of San Francisco	6,400	3,000		80,000	
Melones Mining Company	4,900	800			
Coast Counties Gas and Electric Company	3,700	990	1,250		
Coast Valleys Gas and Electric Company	60		1,375		
West Side Lumber Company	14		700		
Modesto Turlock Irrigation District		15,000			
San Francisco Oakland Terminal Railway			6,500		
Escondido Mutual Water Company		600			
California Oregon Power Company	152,000	28,600		3,300	
Mountain States Power Company	21,000	390	8,800	1,000	
City of Eugene		1,800			
LOWER COLUMBIA GROUP					
Northwestern Electric Company	130,000	13,500	13,750		
Pacific Power and Light Company	37,700	8,760	4,100		
Portland Railway Light and Power Company	360,000	53,650	32,500	30,000	
UPPER COLUMBIA GROUP					
City of Seattle	110,000	26,500	35,000	35,000	
City of Tacoma	137,000	24,000	9,000	36,000	
Pacific Power and Light Company	45,300	12,280	3,575		
Puget Sound Power and Light Company	560,000	89,000	28,500	16,000	
Stevens County Light and Power Company	No meter	1,200			
Washington Water Power Company	415,000	104,000		19,000	
Grand Total	*7,080,274	1,323,055	550,050	410,100	127,500

*Not strictly additive as interchange power amounting to approximately 209,000,000 kw-hr. is included.

the costs of additions, betterments, and extensions to the company's properties, with the further restriction that additional bonds may be issued under the mortgage only when the total annual interest charges on all bonds outstanding are earned at least 1¾ times. Bonds are usually sold at a discount, that is, for less cash than their face value; and it is therefore evident that considerably less than 75 per cent of the funds required for the company's expanding business can be obtained from bonds, the remainder being necessarily obtained from junior securities.

Issuance of Preferred Stock

Practically all of the California utilities have outstanding preferred stock issues which have priority, both as to principal and dividends, over the common stock; in other words, it is necessary to pay preferred stock dividends in full before a dollar of

of the holders of senior securities, for the reason that the amount of dividends which may be paid him is not limited to a certain annual rate, as in general is the case of the holders of the other two classes of securities mentioned, but is limited only by the profits of the business and the policy of the management.

Why the Billion Dollars Will Be Forthcoming

This brief discussion of some of the elementary principles of corporate financing is intended merely as a very general outline of the machinery by which new capital may be secured. In order, however, to obtain the vast sums necessary to develop the West's hydroelectric resources, it is essential that the power companies must be able, in competition with the billions of dollars of corporate issues placed every year upon the money markets of the country, to offer attractive inducements to investors to attract the requisite funds. Fortunately for this region, the

TABLE No. V.

*OUTPUT IN KW-HR. PEAK IN KW. AND LOAD FACTOR FOR 1923
OF THE

PRINCIPAL PRIVATE UTILITY COMPANIES COMPRISING CALIFORNIA, SOUTHERN OREGON-INTERCONNECTED SYSTEM

	Gross kw-hr. delivered to System	Aver. kw.	#Peak in kw.	Load Factor (1922)
The California Oregon Power Company.....	152,051,781	17,400	Not available	.....
Great Western Power Company.....	575,283,500	65,700	107,000	61.7
Los Angeles Gas and Electric Corporation.....	126,691,871	14,500	44,000	33.4
Pacific Gas and Electric Company.....	1,725,619,492	197,000	306,945	64.2†
San Diego Consolidated Gas and Electric Company.....	77,911,600	8,900	20,400	43.7
San Joaquin Light and Power Corporation.....	465,260,480	53,100	70,000	75.9
Snow Mountain Water and Power Company.....	48,410,220	5,500	6,100	90.6
Southern California Edison Company.....	1,469,963,315	168,000	293,000	57.3
The Southern Sierras Power Company.....	206,478,200	23,600	Not available	.....
Western States Gas and Electric Company.....	109,323,960	12,500	19,400	64.3

*Includes purchased power. Interchange not deducted.
†Estimated on basis of average output and 1922 load factor
‡1923 load factor—1922 output.

dividends can be paid to the common stockholders, and in the event of liquidation, the preferred stockholder receives the full par value of his stock together (in the case of cumulative preferred stock) with accumulated dividends, before any disbursement whatever is made to common stockholders. As an additional safeguard for the preferred stockholder, some of the utilities have made their preferred stock non-assessable by the company. All common stock is assessable. These advantages naturally make it possible to obtain funds through the sale of preferred stock at a lower cost than from the sale of common stock, but in order to create a proper equity for the preferred stockholder, it is also essential to sell common stock.

Issuance of Common Stock

From what has been said, it is apparent that the issuance and sale of common stock is a desirable feature of any comprehensive financial plan extending over a period of years. The common stockholder is the shock-absorber in a corporation. He assumes the real risks of the enterprise. When earnings fall below normal, the common stockholder is the first to feel the effects of this condition, since the bondholder and the preferred stockholder are assured of their dividends before any disbursement is made to the common stockholder. On the other hand, his opportunities for profit are commensurately greater than in the case

utilities are in a position to offer securities of sufficient attractiveness to insure their being able to obtain the desired new capital.

Capital invested in progressive and well-managed Pacific Coast power companies is unusually well secured. No new securities can be issued except under the authority of the State Railroad Commissions, which are recognized throughout the country as impartial and well-balanced regulatory bodies. Every dollar of new capital received is invested in plants or properties, subject to the supervision of the commission.

Public utility issues are generally recognized as the most stable class of investments in the market today, with the possible exception of government, state and municipal bonds, which yield a substantially smaller return to the investor. It is a fundamental feature of Pacific Coast electric utility operation that the gross earnings of the various companies continue to grow in spite of the periodic business depressions which sweep the country and which frequently have so adverse an effect upon a great many industrial issues. The war and readjustment period tested to the utmost the stability of public utilities.

The real strength of these securities lies in the fact that the power companies give an indispensable service in a progressive and rapidly growing section of the country; that they are generally conceded to be largely responsible for the tremendous strides made in the development of the state which they

serve; that there is an almost unlimited field for their future expansion; and that the inhabitants of the Pacific Coast states are fully awake to the necessity of producing more and still more power to keep the wheels of progress moving.

One of the most encouraging things about the financing of these power companies is the unqualified support of the local investing public. Westerners believe in their hydroelectric utilities, and are not afraid to back their judgment with their money.

This widespread distribution of ownership among the utilities' consumers is significant not only as an assurance of the confidence and good will of the local public, but also as indicating to some degree its capacity and willingness to absorb hydroelectric securities.

It is, moreover, incontrovertible that as the West Coast grows in wealth and population, more and more of the securities of the local power corporations will be absorbed by her people, and this progressive "home-partnership" is an asset not lightly to be valued by investors, wherever situated, in considering the desirability of the offerings of these companies.

At the present time, when we have ceased to

marvel at the engineering accomplishment in developing the power system which furnishes the Pacific Coast with energy at a cost which places it within the reach of all, it is difficult to realize the conditions that prevailed in this section thirty years ago; we are likely to overlook the basic quality of the commodity which was instrumental in bringing the far West states into the industrial field; we forget the financial and engineering difficulties and the efforts exerted by the men who visioned a scheme of general power supply.

In concluding this review we may say that the hydroelectric power system of the Pacific Coast is a dominating factor in commercial and domestic life. Its transmission lines have silently borne the energy which has made industry possible, and given vitality to the general growth. To a large extent it has brought about the development of the interior of the several states, and has largely influenced the regional prosperity. It has increased the taxable wealth many fold, and has put to use without impairment, natural water power resources which abound. In short, the part it plays in all phases of business and home life ranks it as a primary supporting element in the economic and social structure of the region.

Conventions and Their Byproducts

By Wm. A. Cyr

San Diego Consolidated Gas & Electric Company

CONVENTIONS are now quite a conventional occurrence. Summer is always open season for conferences, conclaves, regional meetings, Chautauquas or confabs, under whatever alias they may appear. A convention by any other name would be as sweet. And a presidential year gives us excellent cause—I was going to say excuse, but that is decidedly out of spirit with conventions—for a few extras not otherwise provided for in dry years.

There are yet existent a few of those rare old conventional people who do not believe in conventions. They, of course, have their reasons, but generally these reasons are only the false whiskers disguising two things. They've either never been to a convention, or have never been asked to one, and the result is the same.

For such rare cases, only a convention to devise means whereby more conventions can be held will solve the matter. And it is important that this be attended to at once. Only by such drastic means will these conservatives be proselyted to conventionalism and the cause saved. There is grave danger that, unless this be done, these earnest souls may destroy a truly great institution,—for in all sincerity it is a great institution.

In defense of conventions, conferences, and conclaves, if they need defense, let me bring the evidence of a "pro" to the discussion. Let me hold the brief for conventions—yes, even for the three great byproducts of conventions: golf, moisture, and song.

(The latter is a cousin of humor, so let me include it with the others.) The editors being generous, my case shall not rest upon the verdict of the bar until conventions and their three byproducts have been nailed tight and clinched on the other side.

Conventions are a symbol of civilization. They would have been impossible in the days when every man was for himself. Meeting of two men on any ground of common interest is a sign of the laying down of weapons. If the first episode of this sort was over a skull full of wassail and this practice survives today, blessed be the wassail that brought them to some touch of brotherhood!

Conferences were impossible in early commercial and industrial life, for like social and governmental activities, they had to go through the fire of cut-throat competition, rapine and murder to evolve into some sense of balance. Society and government, older institutions, had already gone through these trials and emerged more or less purified. And industry, after its first exploratory adventures for new worlds, had to settle down to making something of those worlds it discovered or lose them. Everything fundamental, practically, having been discovered it is necessary to cultivate the garden, and neighborly good feeling has been found requisite lest the marauding chickens next door eat up all the seed each industry has planted.

Borrowing the convention idea from politics, industry and business have improved the model as

they are in the habit of doing with everything they touch, and have changed conventions so that now their own mothers would hardly know them.

Political party conventions may possibly have serious purposes, I've really never been to one, delegate or otherwise. My impression is to the contrary. Conventions, in the hands of engineers and organizers on a grand scale, could hardly escape intensified organization. These men would not feel at home in a convention if it wasn't organized up to the last digit.

So the technical genius of engineers in the electrical industry has evolved from the convention something marvelous in its machinery. They have first given it a positive purpose, then set up the gears and gadgets necessary to make the purpose perform.

What is more spectacular, as a sheer piece of efficiency, than the intricate and wonderful organism of the technical section and its follow-the-leader, the commercial section? The model has been made and it works, and even that last outpost, the disorganized and didn't-care-if-it-wasn't-organized committee of newspaper men, the publicity section, has taken the pattern and cast itself one like it and is in process of becoming efficient. And it likes the idea immensely.

A convention, to the electrical industry, has evolved from being a mere gab-fest and Elks' picnic to something tremendously serious in purpose and sincere in accomplishment. It earns its 7 per cent dividends, just as stock does, because it is designed so that it will do so.

That 7 per cent dividend is the product of preferred stock. It is the meat of experience, of study, of experiment and research. It is the fruit of practice and it is passed freely at the table so that all may partake. If any representative has contracted

This is my case. Whatever else I have in defense of conventions is in behalf of their triumphal triumvirate of byproducts, golf, moisture and song.

The first, a sport that only engineers could have found sportive, will find its defense in another article.

Moisture, too, in view of the water shortage and the sincere effort of conventions to comply with railroad commission rulings for conservation, is deserving of a commentary of its own.



A convention of Smiles was followed by a convention of dentists intent upon making the smiles more toothsome.

And song and humor, the mere fact that a convention of smiles at Coronado was followed the week after by a convention of dentists intent upon making the smiles more toothsome, is sufficient to warrant a concluding dissertation upon this all-important subject.



The first episode of this sort was over a skull full of wassail. It was a sign of the laying down of weapons.

a case of tummy-ache from some particular green apple, he is able to warn the boys and to keep them wary of that tree until the fruit ripens.

This all presupposes good fellowship. A convention and all its delicate mechanisms wouldn't survive ten minutes if fellowship, mutual interest and mutual helpfulness weren't the amperage, the voltage and the wattage energizing the whole proceeding. And to my humble opinion, if nothing else comes out of the convention sausage grinder, the laborer is worthy of his hire and a tip to boot.

America Leads in Electric Brass Melting

IN the electric brass melting field, the United States has attained a tremendous lead over all foreign countries, according to a report just made public by the Department of the Interior, through the Bureau of Mines. Whereas in the United States there are about 540 active electric furnaces doing commercial non-ferrous melting, it is doubtful whether all foreign countries combined use 100 electric brass furnaces. Of the American furnaces, about 275 are induction furnaces, about 135 are moving indirect arc furnaces, 80 are Baily furnaces, while the remaining 50 furnaces are of various types.

The possibilities and limitations of the electric brass furnace are becoming better understood, the Bureau of Mines declares. The increase in the number of furnaces installed indicates that the growth is likely to continue, and that the electric furnace is of decided use to the non-ferrous metal industry. No radically new types of electric brass furnaces have been introduced in the United States in the last two years. The outstanding developments are the continued increase in the use of the induction and the rocking-arc types, and the lack of increase of less efficient types such as the granular-resistor and the muffled-arc types.

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FEEDER SCHEDULE

FORM 3

JOB OR BUILDING

EST. No.

EST. BY

CHECKED BY

DATE

FEEDER NO.	DISTANCE ONE WAY	WIRE NO.	WIRE SIZE	CONDUIT NO.	CONDUIT SIZE	FROM	TO	LOAD	Ells	Bends	L & B Terms	Motor Terms	3/4	1 in.	1-1/4	3	3-1/2	#2	#3	#4	400M	600M
20	3	400M	1	3		Main Lt Service			1		2						20				7.5	
20	3	600M	1	3		Main Power Service			1		2						30					10.5
70	3	8	1	1"		Main Board Emerg. Panel			2		2			70					22.5			
40	3	12	1	3		" " Basement			2		2		40					1.35				
70	3	6	1	1 1/2		" " 2d Floor			3		2			70						22.5		

Fig. 15.

blank columns on the front of the sheet and 14 on the rear in which to enter such items as are necessary to the job being figured and in addition is very convenient for special signal, fire alarm, telephone and other systems where various combinations of wires are used.

In using the feeder schedule sheet shown in Fig. 15, the contractor fills in the eight columns at the left with the necessary information so that in using the sheet he has before him the distance the feeder is to run, the number and size of wire and conduit together with a statement as to what points the feeder is to connect. The ninth column provides space for the estimator to indicate the load that the feeder is to carry. The sixteen columns at the right of the load column are intended to be used for the listing of various feeders, ells, bends, L & B terminals, motor terminals, etc. The estimator can head the columns in any way that he sees fit, the

purpose of the sheet being only to give him a means of checking to make sure that he has not omitted anything from his cost sheet.

As may be seen in Fig. 15, adequate space is provided for the listing of sixteen different items. Should the estimator find that he needs more than this number of columns to list his feeder runs, it is only necessary for him to fold the sheet (Fig. 15) over half way so that the right hand back half folds over and forms the right hand front side as is shown in Fig. 16. In this way fourteen more columns are placed at the estimator's disposal. The cross rules on this half of the sheet are exactly in line with those on the face of the schedule and it is unnecessary for the person using the sheet to rewrite the information originally placed in the first columns. The use of this sheet simplifies the work and saves considerable time in making out the estimate for the job.

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FEEDER SCHEDULE

FORM 3

JOB OR BUILDING

EST. No.

EST. BY

CHECKED BY

DATE

FEEDER NO.	DISTANCE ONE WAY	WIRE NO.	WIRE SIZE																			
	20	3	400																			
	30	3	600																			
	70	3	8																			
	40	3	12																			
	70	3	6																			

Fig. 16.

A Practical System of Accounting for Contractor and Dealer

By F. V. Mitchell

IN Fig. 1 is illustrated a list of Work in Process as it would be prepared at the end of a month from the Job Cost sheets. At the termination of each month the finished Job Cost sheets are removed from the active lot and placed into another binder provided for that purpose. The list of Work in Process is then prepared in accordance with the illustration from the totals of labor and material to date as shown upon the Job Cost sheets remaining in the active binder. The overhead on Jobs in Process is obtained by adding the amount of overhead on unfinished jobs that appears on the list of labor and material put into jobs during the month to the amount of overhead on the same jobs as shown on

job to date so that it can be seen at a glance what customers are slow in making their progress payments and the necessary steps can be taken immediately to collect from them. In this way it is shown very clearly how much the electrical contractor has tied up in a job at the end of any month during its progress by noting the amount appearing in the Total Labor and Material column, less the amount collected from the customer appearing in the Received on Account column. Jobs being performed on labor and material basis that may appear in process at the end of a month would not carry a selling price, as the amount of these for billing purposes naturally cannot be obtained until the completion of

SUMMARY - MAY 31st 1924

Work in Process	DEPT 1 - Wiring					DEPT 2 - Fixtures					Amount Billed			
	LABOR	MATERIAL	TOTAL	OVERHEAD	TOTAL	LABOR	MATERIAL	TOTAL	OVERHEAD	TOTAL	DEPT 1	DEPT 2	TOTAL	Received on Account
Balance May 1st, 1924	1100.00	220.00	3400.00	1190.00	4590.00	400.00	90.00	1200.00	995.00	2095.00	740.00	310.00	1050.00	
add Labor & material May 1924	981.00	2009.00	3040.00	1064.00	4104.00	275.00	676.00	1004.00	750.00	1754.00	465.00	1905.00	6420.00	
	2081.00	4209.00	6440.00	2254.00	8694.00	775.00	1566.00	2204.00	1745.00	4009.00	1190.00	5015.00	16920.00	
deduct Balance May 31st, 1924	1167.00	2313.00	3480.00	1218.00	4698.00	402.00	920.00	1326.00	994.00	2220.00	740.00	310.00	1050.00	5000.00
Cost of jobs finished May 1924	914.00	2046.00	2960.00	1036.00	3996.00	377.00	656.00	923.00	723.00	1721.00	440.00	1900.00	6340.00	

Fig. 2.

the Work in Process statement at the end of the previous month.

The amount billed or selling price on work in process is obtained from the individual customers' accounts in the Accounts Receivable Ledger, as it will be recalled that an entry was to be made for the amount of the contract at the time it was taken as follows: debit Accounts Receivable and credit Unfinished Contracts to the amounts for wiring and fixtures posted separately on customers' accounts. The mere fact that the total amount of the contract is debited to the customer's account at the time the contract is taken, does not mean that the bill is sent out at that time. The customer receives a bill in the usual manner for the roughing-in payment when due and for the balance of the contract when finished. A notation should be made on the customer's ledger account of the amount due on roughing-in payment and of the date he was billed for collection purposes. At the end of each month when referring to customers' ledger accounts for the selling price of unfinished jobs, a notation should be made opposite the amount on the ledger account that the job is not finished at that date in the following manner: "N.F. 5-31-24."

A column is also provided on the Work in Process form to show the amount collected on a

the work when it is ascertained how much labor and material went into the jobs.

Fig. 2 contains an illustration of the Summary prepared at the end of each month to ascertain the cost and the selling price of jobs finished during the month. The former information is obtained by adding the amount of Labor, Material and Overhead put into jobs during the month, as shown on the list prepared for that purpose, to the amount of Labor, Material and Overhead on Work in Process at the beginning of the month. From this total is deducted the amount of Labor, Material and Overhead on Work in Process at the end of the month as shown on the Work in Process statement, and the result obtained represents the cost of jobs finished during the month. The following monthly journal entries are then made for the respective departments and for the amounts as they appear on the line opposite the Cost of Jobs Finished During Month; Cost of Goods Sold—Material Account No. 52 A—is debited with the amount appearing in the Material column, Cost of Goods Sold—Labor account, No. 52 B—is debited with the amount appearing in the Labor column; Cost of Goods Sold—Overhead account, No. 52 C—is debited with the amount appearing in the Overhead column, and Work in Process account No. 15 is credited with the total

of all three above amounts. The debit balance of the Work in Process account No. 15 should agree with the total of the Grand Total columns of Departments Nos. 1 and 2 on the Work in Process statement, and is a concrete proof that the entire work for the

tracts at the end of the month as is shown on the Work in Process statement, and the result obtained represents the selling price of the jobs finished during the month. The following monthly journal entry is then made for the respective departments: Unfin-

Work in Process - MAY 31st 1924											
Job No.	Name	Location	DEPT. 1 - Wiring				DEPT. 2 - Instrumentation				Grand Total
			Labour	Material	Tools	Overhead	Labour	Material	Tools	Overhead	
470	St. John	Wichita	2750	4000	6800	2395	1000	2750	4000	2000	10000
471	St. John	Wichita	2800	6000	9700	3195	900	2100	1000	2000	12000
472	St. John	Wichita	3000	5000	8000	2900	1000	1800	800	1000	10000
473	St. John	Wichita	1600	2600	4200	1400	500	900	1400	1000	6000
474	St. John	Wichita	1800	4000	6700	2245	600	1600	2000	1600	7000
475	St. John	Wichita	2000	3000	5200	1800	700	1000	1700	1000	5000
476	St. John	Wichita	4000	7700	12600	4400	1600	2600	4000	3100	18000
477	St. John	Wichita	3500	6300	9800	3400	1700	2000	3000	2400	12000
478	St. John	Wichita	1800	1000	3100	1050	500	800	1000	700	4000
479	St. John	Wichita	2000	5000	7000	2000	1000	1800	2000	1000	7000
480	St. John	Wichita	4000	7700	12600	4400	1600	2600	4000	3100	18000
481	St. John	Wichita	3500	6300	9800	3400	1700	2000	3000	2400	12000
482	St. John	Wichita	1800	1000	3100	1050	500	800	1000	700	4000
483	St. John	Wichita	2000	5000	7000	2000	1000	1800	2000	1000	7000
484	St. John	Wichita	4000	7700	12600	4400	1600	2600	4000	3100	18000
485	St. John	Wichita	3500	6300	9800	3400	1700	2000	3000	2400	12000
486	St. John	Wichita	1800	1000	3100	1050	500	800	1000	700	4000
487	St. John	Wichita	2000	5000	7000	2000	1000	1800	2000	1000	7000
488	St. John	Wichita	4000	7700	12600	4400	1600	2600	4000	3100	18000
489	St. John	Wichita	3500	6300	9800	3400	1700	2000	3000	2400	12000
490	St. John	Wichita	1800	1000	3100	1050	500	800	1000	700	4000
491	St. John	Wichita	2000	5000	7000	2000	1000	1800	2000	1000	7000
492	St. John	Wichita	4000	7700	12600	4400	1600	2600	4000	3100	18000
493	St. John	Wichita	3500	6300	9800	3400	1700	2000	3000	2400	12000
494	St. John	Wichita	1800	1000	3100	1050	500	800	1000	700	4000
495	St. John	Wichita	2000	5000	7000	2000	1000	1800	2000	1000	7000
496	St. John	Wichita	4000	7700	12600	4400	1600	2600	4000	3100	18000
497	St. John	Wichita	3500	6300	9800	3400	1700	2000	3000	2400	12000
498	St. John	Wichita	1800	1000	3100	1050	500	800	1000	700	4000
499	St. John	Wichita	2000	5000	7000	2000	1000	1800	2000	1000	7000
500	St. John	Wichita	4000	7700	12600	4400	1600	2600	4000	3100	18000
501	St. John	Wichita	3500	6300	9800	3400	1700	2000	3000	2400	12000
502	St. John	Wichita	1800	1000	3100	1050	500	800	1000	700	4000
503	St. John	Wichita	2000	5000	7000	2000	1000	1800	2000	1000	7000
504	St. John	Wichita	4000	7700	12600	4400	1600	2600	4000	3100	18000
505	St. John	Wichita	3500	6300	9800	3400	1700	2000	3000	2400	12000
506	St. John	Wichita	1800	1000	3100	1050	500	800	1000	700	4000
507	St. John	Wichita	2000	5000	7000	2000	1000	1800	2000	1000	7000
508	St. John	Wichita	4000	7700	12600	4400	1600	2600	4000	3100	18000
509	St. John	Wichita	3500	6300	9800	3400	1700	2000	3000	2400	12000
510	St. John	Wichita	1800	1000	3100	1050	500	800	1000	700	4000
511	St. John	Wichita	2000	5000	7000	2000	1000	1800	2000	1000	7000
512	St. John	Wichita	4000	7700	12600	4400	1600	2600	4000	3100	18000
513	St. John	Wichita	3500	6300	9800	3400	1700	2000	3000	2400	12000
514	St. John	Wichita	1800	1000	3100	1050	500	800	1000	700	4000
515	St. John	Wichita	2000	5000	7000	2000	1000	1800	2000	1000	7000
516	St. John	Wichita	4000	7700	12600	4400	1600	2600	4000	3100	18000
517	St. John	Wichita	3500	6300	9800	3400	1700	2000	3000	2400	12000
518	St. John	Wichita	1800	1000	3100	1050	500	800	1000	700	4000
519	St. John	Wichita	2000	5000	7000	2000	1000	1800	2000	1000	7000
520	St. John	Wichita	4000	7700	12600	4400	1600	2600	4000	3100	18000
521	St. John	Wichita	3500	6300	9800	3400	1700	2000	3000	2400	12000
522	St. John	Wichita	1800	1000	3100	1050	500	800	1000	700	4000
523	St. John	Wichita	2000	5000	7000	2000	1000	1800	2000	1000	7000
524	St. John	Wichita	4000	7700	12600	4400	1600	2600	4000	3100	18000
525	St. John	Wichita	3500	6300	9800	3400	1700	2000	3000	2400	12000
526	St. John	Wichita	1800	1000	3100	1050	500	800	1000	700	4000
527	St. John	Wichita	2000	5000	7000	2000	1000	1800	2000	1000	7000
528	St. John	Wichita	4000	7700	12600	4400	1600	2600	4000	3100	18000
529	St. John	Wichita	3500	6300	9800	3400	1700	2000	3000	2400	12000
530	St. John	Wichita	1800	1000	3100	1050	500	800	1000	700	4000
531	St. John	Wichita	2000	5000	7000	2000	1000	1800	2000	1000	7000
532	St. John	Wichita	4000	7700	12600	4400	1600	2600	4000	3100	18000
533	St. John	Wichita	3500	6300	9800	3400	1700	2000	3000	2400	12000
534	St. John	Wichita	1800	1000	3100	1050	500	800	1000	700	4000
535	St. John	Wichita	2000	5000	7000	2000	1000	1800	2000	1000	7000
536	St. John	Wichita	4000	7700	12600	4400	1600	2600	4000	3100	18000
537	St. John	Wichita	3500	6300	9800	3400	1700	2000	3000	2400	12000
538	St. John	Wichita	1800	1000	3100	1050	500	800	1000	700	4000
539	St. John	Wichita	2000	5000	7000	2000	1000	1800	2000	1000	7000
540	St. John	Wichita	4000	7700	12600	4400	1600	2600	4000	3100	18000
541	St. John	Wichita	3500	6300	9800	3400	1700	2000	3000	2400	12000
542	St. John	Wichita	1800	1000	3100	1050	500	800	1000	700	4000
543	St. John	Wichita	2000	5000	7000	2000	1000	1800	2000	1000	7000
544	St. John	Wichita	4000	7700	12600	4400	1600	2600	4000	3100	18000
545	St. John	Wichita	3500	6300	9800	3400	1700	2000	3000	2400	12000
546	St. John	Wichita	1800	1000	3100	1050	500	800	1000	700	4000
547	St. John	Wichita	2000	5000	7000	2000	1000	1800	2000	1000	7000
548	St. John	Wichita	4000	7700	12600	4400	1600	2600	4000	3100	18000
549	St. John	Wichita	3500	6300	9800	3400	1700	2000	3000	2400	12000
550	St. John	Wichita	1800	1000	3100	1050	500	800	1000	700	4000
551	St. John	Wichita	2000	5000	7000	2000	1000	1800	2000	1000	7000
552	St. John	Wichita	4000	7700	12600	4400	1600	2600	4000	3100	18000
553	St. John	Wichita	3500	6300	9800	3400	1700	2000	3000	2400	12000
554	St. John	Wichita	1800	1000	3100	1050	500	800	1000	700	4000
555	St. John	Wichita	2000	5000	7000	2000	1000	1800	2000	1000	7000
556	St. John	Wichita	4000	7700	12600	4400	1600	2600	4000	3100	18000
557	St. John	Wichita	3500	6300	9800	3400	1700	2000	3000	2400	12000

Changes in Electrical Code at Oakland, Calif.

Conduit Requirements Greatly Increased and Redistricting Made Necessary by Ordinance Effective October 1, 1924

The City of Oakland, Calif., has joined the ranks of those municipalities that have recently increased the required use of conduit and have otherwise strengthened the installation requirements. In the case of Oakland this has been done under the guidance of Carl E. Hardy, superintendent of the electrical department, and Ben C. Hill, supervising inspector, both of whom have given the matter exhaustive attention for a long period of time. The entire city has been redistricted and the use of conduit has been made compulsory over a much greater area than heretofore. The new ordinance requirements are given herewith and become effective on Oct. 1, 1924.

Section 28c. All electrical work and equipment shall comply with the requirements of the National Electrical Code of the National Board of Fire Underwriters, as supplemented, amended, and interpreted by the rules and regulations hereinbefore provided for in Section 28a.

Section 28d. When there are obtainable for any given purpose materials, fittings, devices, or appliances that have been examined by a properly qualified and authorized body and approved, listed, or labeled as conforming to the standards of the Underwriters' Laboratories, the United States Bureau of Standards, or other similar institution of recognized standing, then such materials, fittings, devices, or appliances shall be used in preference to others which have not been so examined and approved, listed, or labeled. The use of all materials, fittings, devices, and appliances shall in all cases be subject to the rules and regulations hereunder established.

Section 28e. For the purposes of Section 28f to 28n, inclusive, the following definitions shall apply. "Frame building" means a frame building as defined and intended in the Building Law of the City of Oakland. "Dwelling," "apartment house," and "hotel" means a dwelling, apartment house, or hotel as defined in the State Housing Act. The terms "wiring" and "electric wiring" mean and include all fixed wiring for light, heat, or power purposes and all fixed wiring for other purposes which is in direct electrical connection with any light, heat, or power circuit, excepting wiring in or on a power station or substation controlled and operated by, and located on the premises of, a power company or railway company.

Section 28f. All electric wiring hereafter installed in any building shall be installed in approved metal conduit, armored cable, or metal raceway; provided, however, that concealed knob and tube wiring may be installed in any buildings used or intended to be used only as dwellings, or in frame buildings used or arranged to be used in part as dwellings and in part for business purposes and containing not more than two stories and basement, or in other frame buildings containing not more than two stories and basement.

Section 28g. Anything to the contrary herein notwithstanding, all service wiring in or on any building shall be installed in approved rigid metal conduit or approved lead-covered and steel-armored cable; provided, that the Superintendent of the Electrical Department may permit the installation of concealed knob and tube service wiring in single-family frame dwellings.

Section 28h. Service outlets for overhead services shall be located at least 18 ft. above ground, height of building permitting, and shall be at or within one foot of extreme end of building nearest the overhead supply line and in such position that service drops may be attached within approximately 18 inches thereof and maintain required clearances. All service conduit and conduit fittings installed on the exterior of any building shall be galvanized or sheathed. All services operating at more than 600 volts shall be run underground from supply line to building, except buildings used only as power stations or substations of power companies and railway companies.

Section 28i. No wiring shall be installed in wooden molding or wooden raceway, except by permission of the Electrical Department when making minor changes in or additions to existing installations. No open wiring shall be installed in or on buildings except when and as authorized by the Superintendent of the Electrical Department. Anything to the contrary herein notwithstanding, concealed knob and tube wiring shall not be installed in any case with conductors larger than No. 8 Brown and

Sharpe Gage or when the voltage between any two wires of the circuit will exceed 300 volts.

Section 28j. Anything to the contrary herein notwithstanding, all wiring for motors rated at one horsepower or more shall be installed in approved metal conduit, armored cable, or metal raceway, and all wiring in unceiled or unfinished basements, cellars, and spaces under buildings shall be installed in approved metal conduit or armored cable excepting in buildings where knob and tube wiring is permitted, short runs leading from meter cabinet to wall above when such runs are not located where exposed to liability of mechanical injury.

Section 28k. In new installations, not more than two sub-feeder or branch circuit cutouts shall be installed on the load side of any meter in any meter cabinet opening to the exterior of a building. For a larger number of cutouts, distribution center shall be provided at suitable location within the building.

Section 28l. Electricity or gas shall be used for the lights installed in apartment houses and hotels to comply with Section 66 of the State Housing Act, provided electricity or gas is available in the building.

Section 28m. Whenever any dwelling or apartment house hereafter constructed is wired for electric lighting, and whenever any existing building is hereafter converted into an apartment house and wired for electric lighting, an approved concealed contact type plug receptacle shall be installed in each living room, parlor, dining room, and kitchen; provided, however, that this shall not apply to dwellings costing less than \$1,200.00, as evidenced by the building permit. If any such receptacle in a kitchen, dining room, bath room, laundry, breakfast room, or breakfast nook is connected to a branch lighting circuit, no additional plug receptacle shall be connected to such lighting circuit. So far as is reasonably practicable, all manually operated switches shall be of the safety type and all panel boards and substitutes therefor shall be of the protected type.

Section 28n. No transformer operating at more than 600 volts shall be installed on the roof of any building (other than power stations and substations) unless installed in a transformer vault constructed in substantial compliance with the requirements of the National Electrical Code. No such transformer vault shall be constructed on the roof of any building until the Building Inspector shall have approved the structure of the building as being of sufficient strength to carry the additional weight of such vault and the equipment contained therein.

Section 28o. The requirements prescribed in Sections 28b to 28n, inclusive, shall be deemed the minimum requirements upon which the rules and regulations hereinbefore provided for shall be based, but shall not be deemed to constitute complete requirements in respect to the safety of electrical work and equipment as required by Section 28a hereof. The Superintendent of the Electrical Department may, for good cause or when the public interest may require, permit deviation from the requirements of Sections 28c, 28d, 28f, 28g and 28h.

Section 28p. The Superintendent of the Electrical Department is hereby authorized and empowered to furnish copies of the rules and regulations provided for in Section 28a to persons performing or having supervision of electrical work in the City of Oakland.

SECTION 2. This Ordinance shall take effect October 1, 1924.

Laurence W. Davis Visits Coast and Makes Addresses

Laurence W. Davis, general manager of the Association of Electragists, International, visited the Pacific Coast during the early part of August and spent some time in San Francisco, Oakland and Los Angeles, Calif. Mr. Davis addressed several contractor-dealer meetings at all of these points and told of the work of the association. He also pointed out some of the facts most necessary to the success of the contractor-dealer, many of which are very often overlooked.

At a meeting held in Oakland on Aug. 6, under the auspices of the Electrical Contractors' and Dealers' Association of Alameda County, before an audience of about eighty-five members of the industry, Mr. Davis spoke on "Practical

Problems of the Electrical Contractor-Dealer." Illustrating his talk with figures taken from actual operating conditions and using blackboard and chalk, Mr. Davis drove home the need for accurate accounting and for the due consideration of the item of overhead. He also made comparison between large and small firms, showing that it is easily possible for a small concern, by due attention to its cost of doing business, to make a greater net return for the year than a larger company that fails to recognize the importance of this factor.

On Thursday, Aug. 7, Mr. Davis addressed a luncheon meeting of the San Francisco Electrical Contractors' Association. At this time he spoke of the work of the Association of Electragists, International, and of the constructive effort the association is putting forth for the benefit of contractor-dealers.



Fred LaPlace, resident manager of the Sacramento, Calif., branch of the Thomas Day Company, began his career in the electrical industry in 1906 in the fixture department of the Albert Sechrist Company in Denver. He became resident manager of the Sacramento branch when it was opened in 1922.

Annual Convention to Be Held at Santa Cruz, Sept. 19-21

The annual convention of the California State Association of Electrical Contractors and Dealers will be held at the Casa del Rey Hotel, Santa Cruz, Calif., Sept. 19-21, inclusive. A program filled with live topics and events will be presented and a record attendance is already assured. Walter F. Price, executive secretary of the association, has charge of the arrangements, both of the program and for hotel accommodations. Special arrangements have been made with the hotel for superior accommodations and special convention rates in order that members may, if they desire, be accompanied by their families. There will be games and other entertainment for the children and numerous sports events have been arranged for the ladies. Full announcement of details of the convention will appear in the Sept. 1 issue of the Journal of Electricity.

A Word to the Wise Beats a Bob-Tailed Flush—in Dry Times

Every once in a while Old Man Grouch gets on the job and violently attacks some of us at an unsuspecting moment. When this happens there generally ensues a period of deep "peeve" during which we feel that the whole world is wrong and that there is no hope.

For the benefit of those who are now suffering from such an attack or who may in the future feel the symptoms approaching, the following letter may serve as an antidote to the poison of pessimism. This letter was recently sent out by Laurence R. Chilcote, secretary-manager of the Electrical Contractors' and Dealers' Association of Alameda County, to the members of the association. Mr. Chilcote spent some time gathering the facts and figures used in his letter and collected the information from authentic sources. The figures given prove beyond doubt that any so-called "depression," insofar as the western portion of the country is concerned, exists only in the mind of the pessimist. Mr. Chilcote said:

Reach for the Knocker who says "Business is dropping off" and explains it as due to the Presidential year, or because it has been a dry year, or because of the "hoof 'n mouth"—or anything else.

Reach for him—and drop him off—because otherwise he will be the cause of business dropping off. Broadcasting the misinformation that things are getting quiet will discourage others about to transact some business, and then these others will put their cold feet against the backs of others, and finally some banker will advise everybody to slow up—then—we sure will have a crisis!

Times never were better.

July building permits for Oakland totaled \$3,350,532, or within \$30,000 of the high mark, set way back in June, 1922. This is the second time in history that construction has gone over 3 million.

Electrical permits for the 7 months of 1924 total 7,296, which is 9 per cent increase over the 6,753 permits for the same period of 1923, and 36 per cent increase over the 5,371 permits for the same period of 1922, or 88 per cent increase over the 3,867 permits for the same period of 1921, which is 155 permits more than were issued during the whole year of 1921, or compare them with the 5,673 permits for the whole year of 1920.

The beet sugar yield is 20 per cent higher than last year and represents 16 million dollars gross.

More cars of oranges and lemons were shipped this year than last.

Fifteen per cent more cars of cherries were shipped this year than during 1923.

Grape outlook is excellent and, although the prune and apricot yield will only be 80 per cent of last year, still it will bring more dollars than last year.

San Francisco conditions affect the entire Bay territory, so let us look there, where building permits for the 7 months were over 30 million, or 10 per cent increase over 1923—the post office receipts for the period were over 4½ million or 20 per cent increase over 1923—bank clearings for July were the highest in history, and export trade is

three times as much as the average for the 5-year pre-war period.

Savings deposits for Oakland increased 6.4 per cent, and for San Francisco increased 9.1 per cent over 1923.

Don't judge the peach by the taste of the lemon. Simply because you didn't get the last couple of jobs you estimated, or because you haven't enough work to keep all the men in Oakland busy, is no sign that business has gone to the place where you will shortly go.

Optimism—think it, talk it, act it.

Let's make every year Presidential and dry!



J. G. Cravath, electrical engineer and president of the Pioneer Electric Company, Richmond, Calif., is one of the leaders in the promotion of better home lighting.

China Boss Writes Power Co. "Him Copy Meter Wrong"

The following letter from a member of the Chinese colony of Sacramento, Calif., was received by the Great Western Power Company:

10th May 1924
Present

H. S. Rush,
Sacramento, Calif.
Sir:

Your kind letter received in the same date, soliciting me why it is that we used electric current to the extent during March for the sum is \$4.45 whereas for February it is only \$1.25.

I beg to tell you the reason why we used in March so extensive, because I can scarcely remembered the meter man always come to copy our meter not fix in the end of every months.

Sometimes they come before twenty days soon, and afterwards that ten days come over again. So that the amount one month will make more, and the another month will make more less. (Sometimes no come.)

At the beginning we got light in the China Camp, I can remembered only used about \$2.00 Sometimes in each month.

You can easily understand we only used one point in my sitting place, and sometimes open the middle one in the use time, the rest is all stop. When our sleep is all shut. How can we used double prices.

If we do this more expenses, and you ought to be punish us. While I dare not to do it.

In this case, not you asked me this surprise question, on the other hand, I asked myself so wonderful.

Now I cannot describe you no more but you can ask the Great Western Power Co.'s man, perhaps they copy the wrong points in the meter.

Yours faithfully,

YET LEE TONG,
China Boss.

P.S. I asked the neighbor he says sometimes 50 days no copy the meter and the amount always some more or less in all time.

Lightning Arrester Grounds Is Subject of Publication

A comprehensive publication entitled "Lightning Arrester Grounds" is being distributed by the General Electric Company. The material in this pamphlet is an elaboration of a paper by H. M. Towne, presented before the Southeastern Division of the N.E.L.A. at Tampa, Fla., Nov. 20, 1923, and since published in Electrical World.

The pamphlet includes a total of 18 pages, plentifully illustrated with photographs, charts, diagrams and tables. The subjects covered include the following topics: Ground Electrodes; Components of Ground Resistance; Preliminary Survey of Soil; Effect of Moisture; Effect of Temperature; Seasonal Variation; Effect of Depth; Size of Electrode; Suggestions on Driving Ground Pipes; Connecting Ground Wire to the Pipe; Multiple Ground Electrodes; Artificial Treatment of Soil; Energy Dissipation of Ground Connection; Pole Type Installations; Secondary Grounds Isolated; Common Neutral Ground Wire Distribution System; Station Arrester Grounds; Overcoming Adverse Conditions in Grounding; Railway Arrester Grounds; Inspection; Resistance Measurements, and a summary.

Accounting Problem Questions Answered by Expert

The Journal of Electricity has made arrangements with F. V. Mitchell, public accountant of San Francisco, to answer, in these columns, such questions as may be asked on accounting. All readers are invited to forward their inquiries to The Editors, Journal of Electricity. The answers will be published as soon as possible following the receipt of the inquiry.

Question:

How is the average ratio of material to labor running now on jobs and what should it be?

Answer:

The average ratio of material to labor is running very close to one-and-one, is running very close to one-to-one. It can be readily seen from this that the labor on jobs is running much higher than it should.

Report on Radio Batteries Published.—"The Standardization of Tests for Dry Cells Used in Radio Receiving Sets" is the title of a report recently published by the American Electrochemical Society.

JOBBER, DEALER AND SALES AGENT



Getting the Electrical Story in the Local Paper

Contractor-Dealers Can Present Much Material by Adding a Touch of Local Interest to Suggested Articles

By ROBERT S. MERRILL

Local newspapers, outside the very largest cities, will print in many cases good local stories that promote an interest in electrical merchandising. Here is an example of what one newspaper man from Oregon suggested to city editors all over the country through the "hunches" department—an exchange of experiences—in the Editor and Publisher, a newspaper trade paper:

"Electricity in your town—what does it do besides light the city and operate the toasters on your breakfast tables? Hunt up interesting electrically operated things—the polisher in your shoe repair shop; bakers' and doctors' contrivances and other applications of electricity. What does electricity do on wash day? On cleaning day? How does it save steps down town? How does it contribute to pleasure and education? Your power and light company will be only too glad to help you with suggestions, but don't go to seed on household appliances. Be chatty and clever—don't sound like an advertisement. Stick to local stuff and don't be afraid to use names of firms and persons now and then."

Another interesting suggestion was made by a newspaper woman from Liberty, Mo.:

"A story that will be read with much interest by all owners of any electrical appliance can be secured without much effort from your local electric light office or your meter man. Find out how many electric ranges are owned by the women of your town and the average cost of electricity per month. You will find that where there are servants or any help in the home the amount of 'juice' used will mount up much more. When I wrote a story about Liberty there were over 175 ranges in use so it made a good story. You can interview several of the women who have used the ranges for years and see if their good opinions have decreased or increased with the years of use."

From the fact that the newspapers themselves seem to be taking the initiative, it is apparent that this article is not an attempt to urge electrical dealers and contractors to try for a large amount of free publicity. It is merely pointing out a tendency on the part of newspapers with which men in the electrical trade can connect. Stories like those suggested would not be run nor would the suggestion be passed on if they were not believed to be "good stuff."

One of the reasons why it is good stuff may be found in the last sentence of the first suggestion, "Stick to local stuff and don't be afraid to use names of firms and persons now and then." That is what the readers of newspapers in a less-than-a-metropolis want. The fact that Mrs. Jones has a wired tea-cart means more to her than any general article on the use of electricity.

Nearly all of the newspapers have plenty of available material upon uses of electricity. Even if certain organizations don't supply it to them, the syndicate services to which the newspapers subscribe, send articles regularly written by women, but all of these articles must be written in a general way to apply to conditions everywhere and lack the local effect. That is why you find newspaper men suggesting to one another some interesting ways of covering a subject that is of interest to women readers. And above all, the newspapers cater to the women readers. They buy their syndicate features, comics, household hints, and fiction with the idea of making women regular readers of the paper.

This local element is one thing that has made the many electric homes throughout the country a success. Women reading about these homes are conscious that it is something in their immediate territory—that it is something likely to affect the method of living in their neighborhood and therefore they will want to inform themselves.

Now it has been shown that some newspapers have an interest in electrical subjects as they affect the readers in their particular communities. However, there are not the channels of contact between electrical men and newspapers which would bring out the best material. If competent newspapermen or newspaperwomen and electrical dealers or contractors were sufficiently acquainted, a wealth of interesting material about things electrical would be uncovered and printed.

But in most communities, the electrical store is not covered by the newspaper. Contrary to common belief, newspaper reporters do not go hither and thither seeking news. Most of them are assigned to regular "beats." The development of the electrical field has been so rapid that it has not been assigned a place on any of these "beats."

Anyway, few stories would be uncovered in the routine matter of visiting electrical stores. Few electrical dealers or jobbers know what interests the newspapers. The best stories come from friendly conversations. Let an earnest electrical dealer conduct an ordinary conversation of half an hour with a newspaper reporter, who is good at human interest feature stories, and it is likely one or more topics for "time copy" articles will be uncovered. "Time copy" articles are those that do not have to be rushed into print but can be set in type when the compositors are less rushed and used any time to fill up pages that are sent to the plate makers early in the morning or evening. In short, if live electrical men and live newspaper reporters can become friendly both will benefit.

If an electrical dealer or contractor has something that is clearly of news value, he can telephone it or write it out and send it to the newspaper. Don't ask to have a reporter sent to see you. If there is more wanted, the city editor will send a reporter to see you. Many reporters are literally worked to death and dislike to act as messenger boys for material that could be written out. Nevertheless, the paper will remember you as being friendly and when somebody gets a hunch as suggested in the beginning of this article, you are liable to be called upon first of all. It is the policy of newspapers outside the large cities to take care of their friends, not in the sense of hushing up news, but in mentioning them when it can be done legitimately.

Another avenue of contact was suggested by a newspaper man in the Editor and Publisher:

"No one is more critical of a technical error in a newspaper than a professional man, especially when the error relates to his own profession. Realizing this, one newspaper has arranged with an electrical engineer, physician, attorney, and a dentist, to call them when there is the least doubt in the editor's mind as to the correctness of a technical term used in the story. He calls them his 'advisory board' and they donate their service for the satisfaction of seeing the terms used correctly."

Sometimes contact can be made through meeting reporters at meetings of electrical organizations. For instance, in February the Dallas Electric Club, at a luncheon, had an address on the "Primeval Days of Electricity in Dallas."

This idea of contrast between former and present times is always a good newspaper angle. The papers like to use it in "local stuff," and who, beside the electrical dealer or contractor, can tip them off to "local stuff"?



By using a truck the Ohio Brass Company is able to display line hardware to men on the job without causing them any inconvenience.

Traveling Display Takes Equipment to Field Men

Ohio Brass Company Truck on Educational Tour Permits Men on Job to See Company's Line of Hardware

An unique advertising scheme for the exploitation of the mining, street railway, and transmission line hardware products of the Ohio Brass Company was seen recently in California in the form of a specially designed truck, which has been carrying a display of these goods through the Western territory since October. The truck is in charge of C. H. Burkhalter, commercial engineer for the company at Marshfield, Ohio, who states that it has been on the road for over four years.

As it is shown in the accompanying illustration, the truck contains display cases with drop doors along either side. The various samples are stapled to the walls and doors of these compartments to allow easy inspection. The interior compartment contains the larger pieces of equipment including an electric welding machine.

The campaign is mainly to educate rather than to sell directly, though Mr. Burkhalter is accompanied on successive stages of his route by the company salesman assigned to that particular territory. The salesman, by his familiarity with his own territory, expedites the movement of the truck and sees to it that present customers are visited. The unique feature of the plan is that the truck calls on the men in the field rather than on home offices. Mining camps, line construction camps, and working crews in all lines of work to be appealed to, are visited and shown on the ground the materials the company has to offer, with the idea of demonstrating the goods to the men who actually use them and to receive their suggestions as to the efficacy of these goods. The educational feature of the plan, therefore, works both ways, since the company not only acquaints the trade with its products, but also receives ideas which can be used to improve them.

The company claims that this scheme

has produced excellent results in securing publicity, making good will, improving its products, and building business.

Following the trip through California the truck proceeded to the Northwest, visiting railway and mining companies en route. The general procedure was to bring the truck to a place where construction crews could easily reach it. In many cases foremen have taken their men from jobs in order that all of them might get a chance to see the equipment.

KEEPING CASH CUSTOMERS

vs.

WINNING AN ARGUMENT

By JOE OSIER

If it is a fair question, and I think it is, what do you do about the complaints that daily trickle into your office about faulty merchandise, questionable workmanship, discourteous employees, and the like?

Do you ignore them, setting them aside as trifles, or do you go about making things right, adjusting, explaining, mollifying, thereby holding your trade and making friends for your business?

Some firms—there are too many of them—flatly deny all charges made; they win the argument but lose the customers—but—

The wise hombre, the one who will stay in business and prosper, denies nothing, argues not at all and concedes until the irate purchaser or client is willing to play fair and go 50-50 on the concession business.

It is nice to win an argument, I'll admit, but were I keeping a flock of employees out of the ranks of the workless ones, the while going round and round with ol' John Overhead, I would make concessions and friends rather

than out-shout and out-talk persons who have it in their power to make me wealthy and famous.

A certain contractor-dealer in my town, who has made a conspicuous success of his business, never lets a complaint go by as inconsequential. To him every murmur of dissatisfaction is a matter of importance; every complaint represents evidence that his service and his merchandise are not as good as they might be and he takes steps immediately to determine the why and the wherefore—

Consequently, he is as welcome in any bank in town as a barrel of apples in an orphan asylum.

His credit and friends are unlimited—his organization functions as smoothly as an eel in a vat of lard and his vol-



The End of a Perfect Argument.

ume is increasing so rapidly, he has never been able to definitely locate the peak and—

He swears he has never won an argument in his life.

Of course, this policy and effort in connection with complaints is only one phase of a very broad and intelligent program of developing business but, primarily, this man has succeeded because he has always done the right thing, in the right way at the right time, and he has builded far better than he ever realized was possible.

There are many bad turns, dangerous intersections and congested crossings in business, but all these can be negotiated provided the real business man knows where he is going and proceeds with steady hands at the wheel and eyes open—

Looking out for a public which is ever quick to carp and criticise but which as easily forgives and forgets.

And so I say, The business man who plays to the public; who caters to its caprices; who admits he is wrong (when admitting so involves nothing greater than the loss of an argument), is the one who will answer "Here" when the roll of successful Men of the Trade is called.

INDUSTRIAL NEWS



Rescind Order Granting Increase to Edison Company

Two orders, the first of which granted the Southern California Edison Company a ten per cent emergency increase in all light and power schedules, with the exception of agricultural rates, whereas the second rescinded this order and reopened the case, have been issued by the California Railroad Commission in less than a week. The first order, granting the increase for a period of eight months, was issued Aug. 1 and was to become effective Sept. 1. On Aug. 6 Clyde L. Seavey, president of the commission, and Commissioner Egerton Shore filed a dissenting opinion and following this on Aug. 7 notice was issued that the case had been reopened and that a hearing would be conducted on Aug. 23. The rehearing was scheduled to be held before Commissioners Seavey and Whittlesey in Los Angeles.

In the original order the commission found the increase necessary because of the abnormal expense involved in the production of power resulting from the water shortage in southern California. The decision stated that the Edison company had been forced to manufacture and purchase steam generated power at greatly increased cost. In applying for the temporary increase the company contended that it would suffer a loss of \$5,600,000 in net revenues and asked the commission for an increase to produce additional revenue amounting to \$3,000,000. The commission did not allow this claim, but cut the increase to add approximately \$1,100,000.

The dissenting opinion of Commissioners Seavey and Shore is based upon the following five points:

The principle of basing rates upon average conditions over a period of years rather than upon special conditions of any particular year.

The unsoundness of granting emergency rates in the face of the company's present ability to pay eight per cent dividends on its common stock.

The injustice of imposing upon the company's consumers, the cities, industries and other public utilities dependent upon this company for their electric light and power, the extra burden of sharing the company's temporary losses in addition to the hardships and losses which they themselves are enduring from the same causes.

The incompleteness of the record in the proceeding, which did not include any report of check made by the commission's engineers.

The failure of the majority decision to take into account the accumulated surplus of the company, which, according to the dissenting commissioners' opinion, together with the contingency

reserve and the estimated net revenue for the year, enable the company to meet all operating expenses, depreciation annuity, interest on bonds and all dividends on stock, including eight per cent on its common stock, and still leave a modest surplus.

Idaho Company Claims Error in Commission Rate Orders

Relief from the provisions of recent rate schedule orders of the Public Utilities Commission of Idaho is being sought by the Idaho Power Company. The bill of complaint was filed on July 24 (Journal of Electricity, page 105, Aug. 1, 1924) and alleges that the commission's orders are based on three erroneous premises.

First, the company charges that its property has been undervalued by approximately \$4,000,000; secondly, it holds that the rate of return allowed by the commission on the valuation set by the commission is too low; and thirdly, it asserts that certain rates, such as those for irrigation power and for heating power, are non-compensatory. The purport of the lengthy bill of complaint is found in the company's "prayer" that the court declare illegal and void, as violating its constitutional rights, certain orders of the commission fixing valuation and rates, and that the company's tariff number seven (filed shortly before the commission's rate orders) be declared just and reasonable, and that an injunction be issued restraining the commission and attorney-general from attempting to enforce the rate orders and from interfering with the company's application of its tariff number seven.

W. R. Putnam, vice-president and general manager of the Idaho Power Company, in a statement to the public explaining the company's action, said in part: "While we had hoped to postpone for some time this action so that the present rates under which the company furnishes service, . . . could be fairly tried out, nevertheless we are confronted with a situation which, in our opinion, requires immediate action." He stated that the court action was precipitated by the commission's recent order to show cause why the rates established by the commission in February this year should not be reduced ten per cent.

Index to Volume LII Published.—The index to Volume LII of the Journal of Electricity, covering issues of Jan. 1, 1924, to June 15, 1924, inclusive, has been printed and is ready for distribution. Copies of the index may be secured, without charge, by addressing Circulation Manager, Journal of Electricity, 883 Mission Street, San Francisco.

City Purchases Colorado Springs Distribution System

After negotiating for a period of weeks, the city of Colorado Springs, Colo., has purchased the electrical distribution system, with the exception of two substations, of the Colorado Springs Light, Heat & Power Company for \$600,000. The agreement reached by the representatives of the city and a committee, acting for the bondholders, states that the company is to retain title to substations A and B in the city, though the use of substation A is reserved for the city as long as it is required.

The deal, which gives the city a distribution system within its corporate limits, provides that the company shall continue to operate its system and receive all revenues until the city's steam plant is completed or until Jan. 1, 1926. The city, in the meantime, is to continue to receive an annual rental of \$36,000 for the use of its hydroelectric generating plant.

The agreement reached by the city and the utility company provides that all litigation is to be settled at once and that the municipality is to be given title to the company's transmission system from the Manitou hydroelectric plant to the city limits. The contract also stipulates that the claims of the city against the Colorado Springs Light, Heat & Power Company are to be conceded upon the final acceptance of the agreement.

The agreement just reached comes as a final action in the battle between the utility and the city. The fight began when the citizens refused to renew the company's franchise about a year ago. Following this, bonds were voted to finance the construction of a municipal system including a steam generating plant. It is reported that plans are being made now for the steam plant and an additional hydroelectric unit.

Data Book on Central Station Customers Is Published.—Data recently secured and compiled relative to the number of central station consumers has been published in book form by Electrical World. The book gives figures covering population (census of 1920), number of domestic lighting customers, both present and potential, number of commercial lighting customers, both present and potential, and the number of present and potential industrial power customers. The listing is made by counties, every county in the United States being covered. The book is 9 x 12 in. in size and is bound with a heavy board cover. The book is being sold at \$15 per copy. The information contained is particularly useful to manufacturers in setting up sales quotas and to advertising agencies.

New Hydroelectric Development Added in Oregon

Portland Electric Power Company Starts First Unit of Large Development on Oak Grove Creek Near Portland

At a time when the water shortage generally prevalent over the entire Pacific Coast is beginning to make itself felt in western Oregon, the Portland Electric Power Company, Portland, Ore., brought in the first unit of its Oak Grove hydroelectric development. Begun three years ago, construction of the Oak Grove project, involving the expenditure of \$8,000,000 on the first unit alone, has been carried on steadily until at noon on Aug. 4, the 30,000-kva. generator was synchronized with the other plants of the system, and commenced to pick up load that in recent weeks had been carried only by crowding the steam auxiliaries to a point approximating the limit.

The first unit of the project derives its power from the normal flow of Oak Grove Creek, tributary to the Clackamas River about 20 miles west of

For the most part the flow line follows the contour of the ground, except that certain canyons are crossed on steel span bridges, and four hills are tunneled. The fall between the intake and the entrance to the penstock at Cripple Creek Knoll is less than 190 ft., which is the height of the surge tank located there. The conduit is designed to carry 400 sec.-ft.

The penstock, 1,360 ft. long, 8 ft. in diameter at the top and 6 ft. at the bottom, is made of $\frac{3}{8}$ -in. to 1-7/16-in. steel. At the top is a 66-in. Johnson valve that can be operated from the power house, and that will close automatically in thirty seconds in case of a break in the penstock. At the bottom is a 72-in. butterfly-type valve.

The wheel is an I.P. Morris, Pelton Water Wheel Company, 30,000-hp., 514-r.p.m., vertical, reaction water wheel,

deliver the transmission voltage of 66,000. When the second unit is installed these transformers will be star-connected and will operate at 115,000 volts primary. Connection is made with the present system at the Cazadero plant of the company over a steel-tower transmission line, designed to carry two circuits. This line is 18.71 miles long and is supported by 144 towers of an average height of 72 ft.

An interesting feature of the project is the installation—the first in the Northwest—of a Western Electric Company carrier-current telephone system, from the power house to the company's Station "L," a steam plant in the city of Portland. From here, a metallic phone line completes the connection to the load dispatcher's desk in the Electric Building, so that the dispatcher will have ready and direct communication to the principal plant of the company's system.

Conflicting Application Filed on Green River Site

An application for a preliminary permit covering a 60,000-hp. development at the Split Mountain site on Green River in Uintah County, Utah, has been filed with the Federal Power Commission by A. E. Humphreys, of Denver, Colo., and by J. H. and Mary E. Ratliff, of Vernal, Utah. The proposed project conflicts with plans of the Utah Power & Light Company and would not be of particular interest were it not for the fact that the applicant is known to possess large financial resources.

Mr. Humphreys and his associates propose to develop a head of 160 ft. and to install five units capable of generating 60,000 hp., which is to be used in the manufacture of fertilizer at the nearby phosphate properties of the applicants. In addition, however, it is proposed to divert sufficient water to irrigate 3,000 acres on the east side of Green River and 8,000 acres on the west side of the stream.

The Utah Power & Light Company now holds a preliminary permit and is actively working on the plans for a project at the Flaming Gorge site several miles above Split Mountain. The Split Mountain site probably would be the next step in the power company's plan of expansion. It is anticipated that the power company will oppose the Humphreys' application vigorously. The general information available as to the Split Mountain site indicates that fairly cheap power can be developed there after the Flaming Gorge reservoir has been constructed.

Orders Placed for Copco No. 2 Generating Equipment

Orders for turbines and generators for Copco No. 2 plant of The California Oregon Power Company have been placed with the Allis-Chalmers Manufacturing Company and the Westinghouse Electric & Manufacturing Company, respectively. The latter company will also supply transformer equipment.

The Allis-Chalmers company will furnish the utility with two vertical-shaft Francis turbines rated at 20,000 hp., under 140-ft. net head, at 171 r.p.m. These turbines will be of the Allis-Chalmers circular-section, plate-steel spiral-casing type. "White" hydraulic cones will be used.

Westinghouse generators of the two-



Oak Grove power house of Portland Electric Power Company.

Cazadero. An arch type diversion dam of concrete, approximately 190 ft. long and 69 ft. high, sustains a head of 45 ft. The back water created by the dam covers 27 acres.

From this intake the water is carried in a single pressure conduit, 6.6 miles to the summit of Cripple Creek Knoll above the power house, which is located directly below the knoll on the Clackamas River. This pipe is 9 ft. in diameter, and is of 9/32-in. to 11/16-in. steel, fabricated and erected by the Willamette Iron & Steel Works, Portland.

and connected to it is a General Electric Company 30,000-kva., 11,000-volt, 60-cycle, 514-r.p.m., a.c. generator, with a 90-kw., 250-volt direct-connected exciter. The static head on the wheel at the power house with no water flowing is 922 ft. The operating head under full load will be 860 ft.

Adjacent to the plant is the steel switch yard and substation, where three Westinghouse, outdoor type, water-cooled, 10,000-kva., three-phase transformers, having five per cent full-capacity taps, are delta-connected to

bearing type, rated at 15,000 kva., 6,600 volts, 171 r.p.m. with direct-connected exciters, will be driven by the turbines. The Westinghouse company will also supply four 10,000-kva. water-cooled, 130,000-volt high-tension, 6,600-volt low-tension transformers and complete high and low-tension switching apparatus for this equipment. The transformers are somewhat out of the ordinary in that they are designed to transform simultaneously 10,000 kva. from 6,600 volts to 130,000 volts and 10,000 kva. from a 66,000-volt tie-line to 130,000 volts.

The California Oregon Power Company expects to have the Copco No. 2 plant in operation by May 1, 1925, the whole output being contracted for by the Pacific Gas and Electric Company. This plant is the third one for which the Allis-Chalmers company has supplied the turbines, the first being Copco No. 1, which comprised two 18,600-hp. units, and the second being a 4,000-hp. unit for the Klamath Falls plant. The latter plant is about ready to be put in operation.

Transmission Line Construction Completes Long Connection

The completion in July of a 33-kv. transmission line between American Falls and a point near Burley, Idaho, a distance of 45 miles, marked the completion of a physical connection in transmission lines between Salt Lake City, Utah, and Homestead, Ore., a total distance of about 500 miles. The line



Transmission line map showing connecting links between Salt Lake City and Homestead, Ore.

was built by the United States Reclamation Service to connect the Minidoka irrigation project with the American Falls plant of the reclamation service, and is of about 2,000-kw. capacity.

The Minidoka project is fed also from the west by a connection with the system of the Idaho Power Company, and from American Falls east and south there is an unbroken line connecting with the system of the Utah Power & Light Company, Salt Lake City.

Sierra & San Francisco Company Purchased by Byllesby

Capital stock of the Sierra & San Francisco Power Company has been purchased by H. M. Byllesby & Company from the California Railway & Power Company. The Sierra & San Francisco Power Company owns a 60,000-hp. hydroelectric plant on the Stanislaus River in Tuolumne County, Calif., a 36,000-hp. steam plant in San Francisco and a high voltage transmission system 850 miles long. The property is at present operated under lease

by the Pacific Gas and Electric Company.

The property acquired by the Byllesby company is physically connected with two other companies owned by the Byllesby organization, the Western States Gas & Electric Company, of Stockton, and the Coast Valleys Gas & Electric Company, of Salinas. Ownership of control of the California Railway & Power Company or its affiliated company, the Market Street Railway, of San Francisco, is not included in the transaction.

Judge Decides Power Company May Sue City of Seattle

Another step in its fight with the city of Seattle to collect three-fourths of the municipal street railway tax for 1919, recently paid to King County, was lost to the Puget Sound Power & Light Company, Seattle, Wash., when Judge Neterer of the Federal Court sustained the city's motion for dismissal of the power company's amended and supplemental complaint in a suit pending since June 1. This decision leaves the power company with the option of suing the city for what the company claims is the city's share of the tax paid.

King County recently collected the tax in full from the power company, the latter paying under protest. The power company then brought an action in equity in the United States District Court, in which it attempted to force the city to pay three-fourths of the tax, under the agreement entered into at the time of the purchase by the city of the street railway system. In a later supplemental complaint, the power company asked subrogation for any liens that the state might have had against the street railway property if the taxes had not been paid. The city entered a motion for dismissal, which the court sustained.

In his decision, Judge Neterer held that the special street railway fund is not liable for the taxes sought. He held also that the tax collectors were within their rights in collecting the tax from the power company, and that the latter still has a right to bring a legal action for its share.

City Limits Mark Boundary for Sale of Seattle Power

According to an opinion prepared by Corporation Counsel T. J. L. Kennedy, the city of Seattle has no statutory authority to sell light and power outside its corporate limits. The city council recently passed an ordinance appropriating \$11,500 to extend service lines of the municipal light and power plant from Landsburg, the point on the Cedar River where city water is diverted into the pipe lines, to Ravensdale, a distance of 2.6 miles, to furnish power to a coal company. This ordinance is declared void, and Comptroller H. W. Carroll is instructed that in his official capacity, he cannot recognize as valid any claim made under the ordinance.

The opinion points out that Seattle operates its light and power system in a "proprietary or business, capacity, as distinguished from its usual or governmental functions" and would require special legislative authority to market current outside the city's corporate limits.

Colorado River to Los Angeles Aqueduct Being Surveyed

Data on a plan to build an aqueduct that would supply Los Angeles, Calif., with water from the Colorado River is being secured by field and office forces of that city. The work will be finished late this fall and will consist in part of a map on a scale of 1 in. to 10,000 ft., showing the proposed route from a diversion between Blythe and Parker on the Colorado River to reservoirs in the foothills of Los Angeles, a total distance of about 225 miles.

The aqueduct as planned would have a capacity of 1,500 sec.-ft. and would reach its highest elevation at Shaver Summit—elevation 1,700 ft.—which is 70 miles from the intake and about 1,400 ft. above it. The lift to this summit would be made by pumping plants along the 70-mile length of the aqueduct, three or four plants being required. From Shaver Summit the flow would be by gravity. A total of 40 to 50 miles of tunnels would be required in the proposed location. These would be chiefly in short lengths except for one bore near Cabezon with a minimum length of 13 miles. No definite estimate of cost has yet been made.

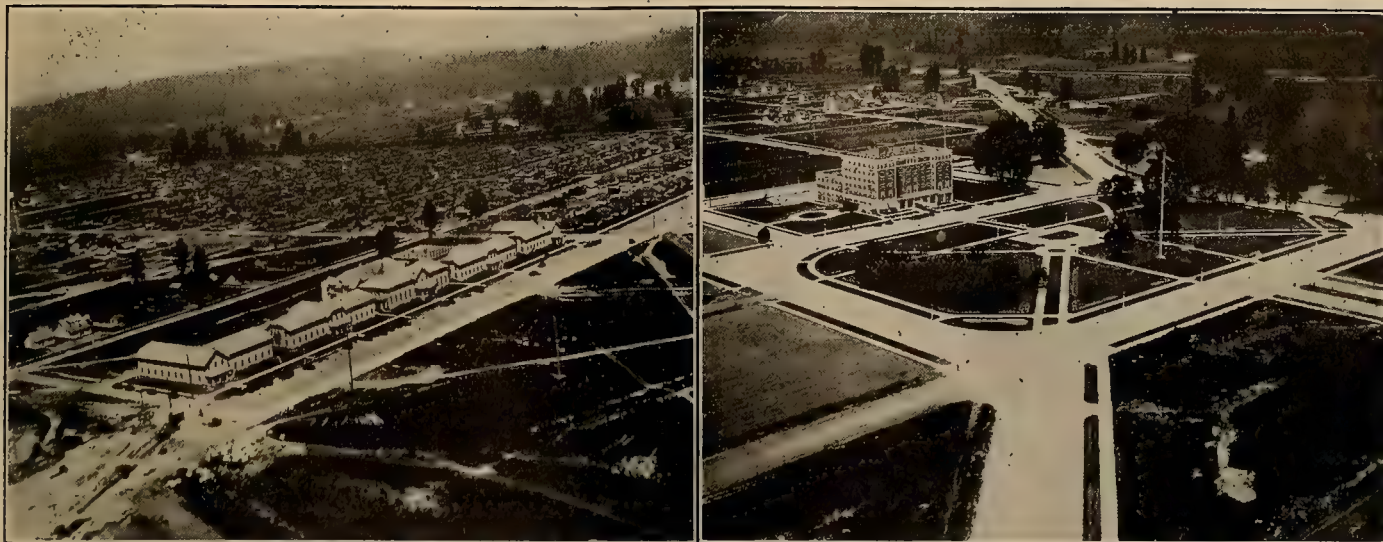
Extensive Underground System Is Planned for Vancouver

For the purpose of improving service conditions in the business section, and of eliminating interruptions, due to short circuits caused by a combination of dust from the mills and moisture from the atmosphere during fogs, in the industrial section, the British Columbia Electric Railway Company, Vancouver, contemplates quite an extensive program of underground construction in that city. Plans for the work are being formulated at the present time. By an agreement with the city two years ago, the company agreed to install its circuits underground in a limited area, but recently it decided to enlarge materially upon the original plan so that a much larger area could be served more adequately.

Although the details of the project have not been worked out definitely, Charles E. Kuhn, underground engineer, who will have charge of the work, states that the general plan includes the underground construction of a 34,000-volt line from the Horne-Payne substation to the Main Street substation, and 12,000-volt feeders from there to various substations in all directions; one to the south section of the city, another west to the Haro Street substation, a third to Point Grey substation, and a fourth to serve the industrial section along the waterfront. Distribution lines will radiate from these stations to cover a large business area of the city.

On account of the magnitude of the project, and the necessity of keeping service on in all districts and at all times during construction, the job will be consummated gradually over a period of years. As yet no complete estimate of the cost has been made.

General Electric Company Publishes Description of Manufacturing Processes.—A well illustrated booklet devoted to a description of the factories manufacturing General Electric Company products has been published by the company. The booklet also presents illustrations of the manufacturing processes.



At the left may be seen one of Longview's residence districts, intended primarily for employees. Jefferson Square, civic center park at Longview, and the Hotel Monticello are shown at the right.

Mammoth Electrical Sawmill Begins Operations

Long-Bell Lumber Company Dedicates First Unit of Gigantic Project Commenced Last Year at Longview, Wash.

What is said to be the largest lumber manufacturing plant of its kind in the world was dedicated recently in a three-day celebration at Longview, Wash., attracting 18,000 to 20,000 visitors from Portland, Ore., Seattle, Wash., and other cities of both states. The erection of the lumber plant involved as a side issue the planning, constructing and exploiting of a modern city that may some day house 50,000 inhabitants. The event celebrated the commencement of lumber manufacturing in the first unit of the Long-Bell Lumber Company's plant, building operations on which were commenced a little over a year ago, on the banks of the Columbia River some 50 miles northwest of Portland, Ore.

The mill, which has a capacity of 500,000 ft. of lumber per eight hours, is electrically driven throughout, being supplied with power from a hog-fuel steam plant located adjacent to the main mill building. Three 6,000-kw. turbo-generator sets supply the mill, the town of Longview and the logging operations of the Long-Bell Lumber Company at Ryderwood, 30 miles north. Space in the power plant is reserved and boiler and auxiliary capacity is provided for three additional 6,000-kw. units, which are to be installed as needed for the growth of the city and in the development of a second manufacturing unit identical with the first. This addition is contemplated in the complete plan of the project.

All the equipment in the generating station is of General Electric Company manufacture, and some of the principal items, beside the generators, are two 300-kw. synchronous motor-generator sets for delivering direct current to the monorail and crane equipment, and two 200-kw. motor-generator sets, one with turbine, to float on the line for emergency service. Station service for pumps and auxiliary equipment is supplied at both 2,200 volts and 460 volts secondary, stepping down through a bank of three 1,500-kw. transformers from the generator voltage of 13,200.

Distribution for the mill is accomplished by 13,200-volt circuits carried underground to four substations situated at different points in the mill from which the secondary voltage is 460 is carried through controlling equipment to the motors. The plant machinery is driven by approximately 600 motors, nearly all the product of the Westinghouse Electric & Manufacturing Company, aggregating a total rated capacity of 13,344 hp. Some of the largest of these are: one of 450 hp. on the Williams hammer hog, two of 300 hp. each on the two head rigs, one of 250 hp. on the gang saw, two of 300 hp. each on the edgers, and three of 200 hp. each on the resaws.

An interesting feature of the mill operation is found in the control equipment, in which the circuits run from the substations through load-center buses, situated at convenient places throughout the mill, where the contactors controlling nearby motors are located. In general all the motors driving transfer rolls and conveyor chains are controlled by push buttons at the operator's stand. The system of handling the lumber throughout the manufacturing process is such as to reduce to a minimum the amount of manual labor required.

The yard, which covers 46 acres and is capable of storing 80,000,000 ft. of lumber in 2,884 piles, is crisscrossed by 30 miles of track. Movement of the lumber will be facilitated by the operation of four 7-ton, Baldwin-Westinghouse electric locomotives equipped with Edison storage batteries. The loading dock for water shipments, with a frontage of 1,400 ft. on the Columbia River,



First unit of the plant of the Long-Bell Lumber Company, showing 18,000-kw. steam plant in right center. A portion of the city of Longview may be seen in the background.

has storage capacity for 40,000,000 ft. of lumber, and is equipped with the largest hammerhead crane in the world.

Some conception of the size of the project in general can be gained when it is stated that the mill site includes 1,737 acres. Twenty-eight buildings have 34 acres under roof, while two log ponds cover 150 acres. The concrete fuel house, supplied with hogged-fuel and sawdust by conveyors and blowers, is 240 ft. x 220 ft., and furnishes storage for 1,215,000 cu. ft. of fuel. Overproduction of sawdust and material that cannot be utilized in the boilers will be disposed of in the largest waste-burner in the world, 100 ft. x 120 ft. The forty dry kilns, one cooling shed, two dry sorter buildings, three rough lumber sheds, two dressed lumber sheds, and two loading sheds constitute the lumber storage and loading units with a combined capacity of 120,000,000 ft. of lumber.

Logging operations centering at Rydewood are also largely electrified. From a substation just outside the mill property, at which a 13,200-volt circuit coming underground from the steam plant is stepped up to 66,000 volts, the transmission line extends north about 20 miles to a substation where it is stepped down and distributed to movable substations for a second step down to the running voltage of the motors driving the logging donkeys. A standard gage, common carrier railway, the Longview, Portland & Northern, hauls the logs to the mill pond.

Distribution for the city of Longview is accomplished by means of a 13,200-volt line carried to various substations placed in different districts of the city, thence by 2,200-volt distribution lines to the service transformers. Approximately one year ago a few wooden buildings dotted over the meadow and grazing land marked the site of the city of Longview. Today the population is 5,800. There are 90 miles of graded, graveled or paved streets, 17 miles of concrete sidewalks, 22 miles of sewers, 14 miles of water mains and 4 miles of street lighting. Among the 277 business and civic enterprises there are three hotels, two apartment houses, two banks having combined deposits of over a million dollars, a daily newspaper with a circulation of 4,000, 800 homes in six residential districts, and a school with 900 pupils. A \$150,000 theater and a \$200,000 hospital are under construction.

Further Development of Skagit Urged by Mayor

Claiming that, at the present rate for power, there will be no energy for sale from the present Skagit unit by 1927, Mayor E. J. Brown of Seattle, Wash., has directed the members of the Board of Public Works to make an immediate and thorough survey of the entire Skagit project, and to compile data for submission to the city council to enable that body to consider its further development. Mayor Brown suggests the immediate development of the Skagit project either at Gorge Creek or at Ruby Creek.

In his annual message to the council in June, Mayor Brown urged the early construction of the Gorge Creek masonry dam, but shortly after, while the mayor was out of the city, the council passed a resolution which should halt work on the Skagit development for an

indefinite period after the completion of the first unit, from which power is expected to be available by Sept. 1. The mayor now desires that the council reconsider this action.

Commercial Department Changes Made by Colorado Utility

Through the merger of the Colorado Power Company with the Public Service Company of Colorado, the commercial department of the entire organization is being revamped. The Western division of the latter company, formerly the Western Light & Power Company, insofar as the commercial department is concerned, likewise has been placed in the reorganized department.

Charles A. Semrad, vice-president and assistant general manager of the Public Service Company and formerly directing head of the Western division with headquarters at Boulder, has been designated as commercial manager to succeed R. G. Gentry, who has been placed at the head of a new department of public relations.

All of the commercial activities will be directed from Mr. Semrad's office in Denver, it is understood. Assisting him in the operation of the department will be E. B. Ball, formerly commercial manager of the Western division, F. F. McCammon in charge of power sales, R. G. Munroe in charge of gas commercial activities and another executive from an outside Doherty property to direct electric merchandising activities. Minor adjustments in the remaining personnel will also be necessary as a result of these changes, it is reported.

Clare N. Stannard, vice-president and general manager of the company, is now in the East, but this fact will not prevent the further development of policy in connection with the commercial department inasmuch as Thomas L. Kennedy, general commercial manager of the Doherty system, is personally supervising the changes in Denver.

Point in License Termination Brought Out Recently

Action on the part of the Rock Creek Power Company, of Missoula, Mont., in beginning a small amount of construction work on the eve of the expiration of its license covering a small project on Rock Creek in western Montana, has raised the question at the Federal Power Commission as to how such situations can be met.

If construction work is not begun before the expiration of time fixed in the license, the license can be revoked by a simple written order from the commission, but when construction work actually has begun, the license only can be revoked through court proceedings. From a legal point of view, it seems that the licensee will have complied with the letter of the law if he makes a few scratches on the project. While advantage may be taken of the law in this regard, the feeling at the commission is that a change in the law is unnecessary since the licensee is throwing away a portion of the time allowed for completion. It will be possible for the commission to terminate the license on the latter date. If another applicant who is prepared to make the development promptly should appear, an injunction then could be sought.

Use Emblem in Tile to Ornament Power Company Buildings

The San Diego Consolidated Gas & Electric Company, having adopted as a standard for all of its new buildings the Spanish type of architecture, has not only made use of tiles to decorate those new buildings, but has worked its emblem into tile for use in corner-stone insignia upon each of its properties. The emblem of the San Diego Consolidated Gas & Electric Company, designed some two or three years ago by R. C. Cavell, superintendent of the record department, and executed by Philip E. Myers of that department, consists of a lamp post, lighted by the word "Service" and contains the company name. To adapt this to a corner-



The new standard insignia of the San Diego Consolidated Gas & Electric Company as applied to all new buildings erected by the company.

stone at first presented a problem until the idea of using tile was conceived.

Upon a large bronze frame, about 3 x 5 ft. in size, the tile insignia is set. A bronze plate bearing the Billesby Engineering & Management Corporation legend is placed directly underneath it, and the year in which the building is erected is to be found immediately below. The whole emblem is illuminated at night by an electric light concealed beneath an especially designed wing device at the top of the plaque.

Eastern Oregon Range Campaign Successful.—The electric range educational and sales campaign of the Eastern Oregon Light & Power Company, Baker, Ore., is reported to have been quite successful. In the first three weeks of the campaign 29 ranges were installed. Contractor-dealers have also reported that the sales of ranges have been satisfactory and that more wiring for electric heating is being done this year than was last. Miss Grace Bogue of the Westinghouse Electric & Manufacturing Company has been giving demonstrations of the electric range to assist in the sales campaign.

Electrical Inspectors Conduct Meeting at Long Beach

At the two-day convention held in Long Beach, Calif., by the California Association of Electrical Inspectors, San Francisco was chosen as the next meeting place of the convention which will be held some time in March. The present officers of the association were re-elected with the addition of R. W. Albright, city electrician of Long Beach, as first vice-president. The selection of San Francisco for the next convention is in conformity with an agreement to hold meetings in the northern and the southern parts of the state alternately.

During the morning session of the second day, standardizing of electrical installation throughout the state was discussed. The organization is co-operating with the State Industrial Accident Commission to plan safety measures for places of employment. It is worthy of note to know that the plans of the industrial accident commission were prepared by a committee composed in its entirety of members of the inspectors' association.

Social features of the convention were many. In the afternoon about eighty-five were taken on a boat ride through the harbor as the guests of the Chamber of Commerce. In the evening a dinner and entertainment program were given the delegates and their wives at the club house in Recreation Park. A ladies' entertainment committee composed of Mrs. O. W. Newcomb and Mrs. Clyde Baty entertained the ladies of the delegation while the business sessions were in progress.

The officers of the association are: H. W. Stitt, Fresno, president; R. W. Albright, Long Beach, vice-president; C. W. Mitchell, San Francisco, secretary and treasurer.

Salt Lake City Electric Pumping Plant Put in Service

A new electrically-operated pumping plant for Salt Lake City, Utah, was formally placed in operation during the latter part of July, and is proving an appreciable factor in augmenting the city's water supply. The plant is located southeast of the city, near the mouth of Big Cottonwood Canyon, and supplies irrigation water from Utah Lake to farmers, in exchange for mountain water from the canyon. About 5,000,000 gal. per day is being added in this way to the city's water supply.

The installation consists of two pumps, one being a 12-in., double-suction, bronze impeller, centrifugal, with a capacity of 4,500 gal. per minute, against a 200-ft. head, driven by a 350-hp., 2,300-volt motor. The other is a 16-in. pump of the same general description, with a capacity of 7,200 gal. per minute, and driven by a 500-hp. motor.

The pipe line is approximately 6,950 ft. in length, of 30-in. continuous wood staves, creosote treated. The pumps are capable of delivering about 17,000,000 gal. of water every twenty-four hours.

The General Electric Company has recently issued a very attractive booklet on "The Splendor of Well Lighted Streets." The book contains considerable interesting information on the manufacture of lamps and their application to street lighting.

Directors Approve Construction of Baker River Project

Approval of the plans for the Baker River hydroelectric project of the Puget Sound Power & Light Company and the appropriation of the necessary funds to erect the first unit have been made by the board of directors of the company. The preliminary work on the project is practically completed and it is the intention of the company to have the first unit in operation by November of 1925.

The Baker River development is to be situated on a site near the town of Concrete, Wash., and will have an ultimate installed capacity of approximately 45,000 hp. The estimated cost of the development has been placed at \$5,000,000.

The Puget Sound company is at present installing a new unit in its White River plant which will increase the capacity of this installation by 23,000 hp. The cost of this development work is about \$1,000,000. Present plans call for the completion of this work in November of this year.

Sacramento Proposes Dam on American River.—One thousand eight hundred dollars has been voted by the city council of Sacramento, Calif., to procure an accurate survey of the site on which the city proposes to erect a 200-ft. dam. The dam site is on the American River above Folsom. According to preliminary estimates the dam would impound 400,000 acre-ft. of water and it is maintained would provide Sacramento with a domestic water supply and provide irrigation for 175,000 acres and a seasonal supply of hydroelectric power. The erection of the dam was originally planned as a flood control measure.

Steam Plant Lease Sanctioned by California Commission.—The California Railroad Commission has approved the contract between Pacific Gas and Electric Company and the California and Hawaiian Sugar Refining Corporation for the leasing by the former from the latter of a steam electric generating unit at the Crockett plant of the sugar company.

The Roller-Smith Company, New York City, has issued bulletin No. 160 descriptive of its new line of portable, type GSA, alternating current measuring instruments.

Books and Bulletins

ELEMENTS OF ELECTRICAL DESIGN

By ALFRED STILL. 535 pages, 215 figures, \$5.00. Published by McGraw-Hill Book Company, Inc., New York, N. Y.

A student of electrical engineering should not only study the theory and application of electrical machinery and allied equipment, but should also obtain some information covering the elementary principles of the design of such machinery. According to the author this book is an attempt to provide the student with a text in which the problems of the designing engineer are

used to illustrate the application of fundamental laws in the design of practical machines and apparatus.

This book is a treatment of the elements of electrical design and the earlier chapters deal with resistances and I²R losses covering the electric magnets; the magnetic circuit as applied, for example to the design of electric magnets; and the electrostatic circuits using the design of insulators and static condensers.

In the latter chapters various machines and several types of apparatus are considered. A number of problems are worked out numerically to show how the fundamental principles are applied in the design of practical machines.

A more detailed account of the contents of the book can be indicated by reference to the various chapters. After a short introduction in which suggestions are given for methods of the using of the book as a text, chapters two and three treat of the electric circuit. Chapters four and five give the fundamentals of the magnetic circuit and the design of electromagnets. The next chapter is devoted to the dielectric circuit with a treatment of insulator design such as porcelain and condenser type bushings and insulation of transformer windings and the design of underground power cable. Then follow the chapters on the design of direct current machinery with about one hundred and forty-two pages allotted to the subject. Five chapters covering one hundred and forty-eight pages are then devoted to the designs of rotating alternating current machinery. Next follows a chapter on the elements of design of alternating current transformers and the book concludes with a short chapter on the mechanical design of electrical machinery.

In explaining procedure in design the author has attempted to base all arguments on scientific facts and to build up a design in a logical manner from known fundamental principles. As stated before, this book is intended for the student. It does not contain a collection of design constants and other information for the experienced designer, nor does it give data covering the dimensions, weights and performances of modern machines. It does, however, present a method of design which should yield satisfactory results when developing new types of machines or when existing patterns or tools are not a factor to be considered.

Throughout the book the author urges the student to obtain a concrete mental conception of the hidden actions going on in the machine which produce visible results which can be measured. The drawings, which are excellent, and the explanations are presented on this basis. For example, in the design of electromagnets and high voltage insulators it is urged that the reader picture the imaginary flux lines and the equipotential surfaces which are everywhere normal to the direction of these lines. Also in studying the action of generators and motors the electromotive forces developed in the armature windings are represented throughout the book as being due to the cutting of imaginary lines of flux by the conductors. Test problems given at the end of each chapter should add to the usefulness of the book for class room work.

E. R. S.

Meetings

Illumination Design Schools to Be Held in California

Illumination design schools, to present those in attendance with the fundamentals and basic principles of modern lighting, are to be conducted in California by the Lighting Bureau of the Pacific Coast Electrical Association during September. The first school will be held in the auditorium of the Pacific Gas and Electric Company Building in Oakland, Sept. 22-26, and the second one will be held in the Contractor-Dealers' Association Building in Los Angeles, Sept. 29-Oct. 3.

A group of illumination engineers has been secured to act as instructors in the schools and the course will involve both theory and practice. Each class will be limited to 50 members in order that individual attention may be paid to the students. No one will be accepted who cannot give his full time to the work during the time that the school is being held. Invitations to the school are to be sent to contractor-dealers, builders, architects, engineers and the jobber and central station salesmen.

Preliminary plans for the school indicate that there will be no charge for the course, except possibly a nominal registration fee to be determined at a later date. To insure the attendance of the students a \$10 deposit will be required, which will be returned at the conclusion of the course, if attended regularly, but will be forfeited at the rate of \$2 for each day missed.

The tentative curriculum for the course has been set as follows:

- Perspective or scope of modern illumination.
- Fundamentals and definitions involved in illumination calculation.
- Practical problems in simplified illumination design.
- Problems in industrial lighting.
- Survey of an actual industrial lighting problem.
- Preparation of plans on industrial problems.
- Study of kinds and types of lamps, and how they are affected by abnormal voltages.
- Principles of light reflection and diffusion.
- Study of different types of lighting equipment.
- Study of store, commercial and public interior lighting.
- Study of window lighting.
- Application of color lighting.
- Study of intensities and foot-candle meter.
- Study of lighting problems for offices, drafting and school rooms.
- Principles of street lighting.
- Explanation of lighting and safety codes.
- Study of value of light for commercial purposes.
- Talks on Illumination Engineering Society.
- Maintenance of lighting systems.

Contractor-Dealers' Business Is Discussed at Meeting

Better business practice for contractor-dealers and higher wiring standards were the principal subjects of discussion at a recent meeting of northern Colorado electrical men in Fort Collins, Colo. Contractors from that city, also from Loveland and Windsor were in attendance along with representatives

of the Public Service Company of Colorado from each of those communities.

The meeting was arranged by Frank Johnson, city electrical inspector, and through his efforts the mayor of Fort Collins, several architects and representatives from the electrical department at the state agricultural college were present. A. L. Johnston of the Fort Collins Electrical Supply Company presided.

The new National Electrical Code was explained by L. A. Barley, chief engineer of the Mountain States Inspection Bureau, and S. W. Bishop, executive manager of the Electrical Cooperative League of Denver, discussed better business practices as applying to electrical contractors and the need for higher and more stringent standards in wiring.

Pacific Radio Exposition Will Be Opened on Aug. 16

Presenting one of the largest and most complete collections of radio apparatus ever assembled, the Pacific Radio Exposition will be opened in the San Francisco Civic Auditorium on Aug. 16. The exposition, which is being sponsored by the Pacific Radio Trade Association, will be open until Aug. 21.

Approximately 150 booths will be used by over 200 manufacturers to display their products. Virtually every type of receiving set will be exhibited

COMING EVENTS

Conference of Representatives of Electrical Leagues—

Camp Cooperation IV, Association Island, Henderson Harbor, N. Y.
Sept. 2-6, 1924

Rocky Mountain Division, N.E.L.A.—

Annual Convention—Glenwood Springs, Colo.
Sept. 15-17, 1924

Colorado Public Service Association—

Annual Convention—Glenwood Springs, Colo.
Sept. 15-17, 1924

California State Association of Electrical Contractors and Dealers—

Annual Convention—Santa Cruz, Calif.
Sept. 19-21, 1924

Pacific Division, Electrical Supply Jobbers' Association—

Quarterly Meeting—Del Monte Lodge, Pebble Beach, Calif.
Sept. 25-27, 1924

Association of Electragists, International—

Annual Convention—West Baden Springs, Ind.
Sept. 29-Oct. 4, 1924

Illuminating Engineering Society—

Annual Convention—Briarcliff Lodge, Briarcliff Manor, N. Y.
Oct. 27-31, 1924

as well as the various accessories. During the time that the show is in progress trade meetings will be held from 10 a.m. to noon each day, and programs will be broadcast every afternoon and evening from a studio on the main stage of the auditorium. The exposition is the first of its kind to be conducted under the cooperative non-profit plan.

Rocky Mountain Association Moves Office.—Offices of the Rocky Mountain Electrical Cooperative League have been moved to a permanent location at 626 Kearns Building in Salt Lake City, Utah.

Employees of San Diego Utility Hold Annual Picnic

Employees of the San Diego Consolidated Gas & Electric Company, under the auspices of their Employees' Association, held their tenth annual picnic at Del Mar, July 27. In all respects it was declared the largest and most successful in the history of the association.

Committees organized by Wm. H. Talbott, president of the Employees' Association, made possible the transportation, feeding and entertainment of 2,500 people, employees of the company, their families and friends. Festivities began with the band concert by the Employees' Association band and included: first-aid demonstration, children's treasure hunt in the sand, airplane stunts by an employee, release of carrier pigeons, races, meter reading and pole climbing contests, and ended up with dancing. Moving pictures of the whole affair were taken by a local theater and shown the week following the picnic. A barbecue constituted one of the main events, and by means of four serving lines, the crowd of 2,500 was served in 55 minutes.

Commercial Section Executive Committee Meets at Fresno

The first meeting of the executive committee of the commercial section of the Pacific Coast Electrical Association was held at Fresno, Calif., on Aug. 1. The meeting was presided over by A. M. Frost, chairman of the committee, and was attended by practically the entire membership.

Among other important matters under discussion was the budget for the ensuing year. This was compiled and submitted to the general executive committee of the association for action. The next meeting of this committee will be held in Los Angeles Oct. 17-18.

City to Purchase Substations for Operation of Railway

Prices and terms on which the city of Seattle may acquire the street railway substations in the city still owned by the Puget Sound Power & Light Company will be announced shortly. A board of appraisers including James Ferguson, for the city, S. L. Shuffleton, representing the Puget Sound Power & Light Company, and A. S. Downey, representing the public, has been appointed and will name the terms upon which the five substations may be purchased.

The stations, by means of which the power company is supplying current for the operation of the municipal street railway, must be acquired by the city before municipal energy to be produced by the Skagit plant can be utilized in place of the current that the city, meanwhile, is purchasing under contract.

Puget Sound Employees Picnic.—More than 700 employees, officials and friends of the Puget Sound Power & Light Company, Seattle, Wash., enjoyed the company's annual picnic at its vacation park at Lake Tapps, recently. Swimming, races, band music, dancing and various contests comprised the day's program. The company furnished transportation to and from the picnic grounds.

Manufacturer, Dealer and Jobber Activities

The Estate Stove Company, Hamilton, Ohio, has opened new display quarters at its original location, 839 Mission Street, San Francisco, Calif. The display rooms in the Furniture Exchange Building will be maintained as usual and a complete sample stock will be carried at the new location.

A. J. Lindemann & Hoverson Company, Milwaukee, Wis., have recently brought out a time and temperature control for use on their "L. & H. Electrics" line of electric ranges. This control embodies several new features and is so designed that it may be attached to ranges originally sold without this equipment.

C. Marsden, who recently purchased the business of the Smith Plumbing & Electric Company, 265 Sherman Way, Van Nuys, Calif., has disposed of all plumbing fixtures and in the future will carry only electrical and radio goods. He is now doing business under the name of Marsden Radio & Electric Company.

T. L. Rosenberg, formerly of the Quality Electric Motor Company, Oakland, Calif., has sold his interest in that firm and has opened a new establishment under the name of T. L. Rosenberg Company, at 419 Webster Street, Oakland.

The Globe Electric Supply Company, 1622 Wazee Street, Denver, Colo., has moved to new and larger quarters at 1843 Wazee Street. The new location has superior trackage facilities as well as greater facility for handling customers' orders.

Curtis Lighting, Inc., have issued a new booklet on "Store Lighting with X-Ray Reflectors." This book contains illustrations of applications of this type of equipment and also shows useful information on the planning and execution of proper show window lighting.

The General Electric Company, has brought out a new thermal overload relay designed to follow more closely the heating curve of the motor. The device is designed to afford better protection against overheating of the motor and is made in both single and double pole types.

The F. W. Wakefield Brass Company, Vermillion, Ohio, has recently brought out a new "Red Spot" store lighting unit especially designed for central station sales campaigns. The unit includes a canopy extension, with knockouts; a special mounting for individual pull switch and a screwless holder.

Harvey Hubbell, Inc., Bridgeport, Conn., have recently brought out a new switch plug that combines a pendant push button switch and a handy convenience outlet. The slots of the outlet provide for the attachment of any lamp socket device such as flatiron, percolator, etc.

The Square D Company, Detroit, Mich., has issued a new circular descriptive of the Square D safety switch. The circular is illustrated and contains information of value to contractor-dealers.

The Superheater Company, New York, N. Y., has recently published a booklet devoted to a history of the manufacture of Elesco superheaters. The development of the superheater for locomotive, marine and stationary steam engines is also covered.

Fulton Iron Works Company, St. Louis, Mo., has prepared for distribution Bulletin No. 806 entitled "The Fulton-Diesel in Industry."

Roller-Smith Company, New York, N. Y., has published a supplement to Bulletin No. 400. The leaf is devoted to the company's line of d.c. switchboard instruments, Type TD. The instruments described in the supplement are 3½ in. in diameter. The company has also issued Bulletin No. 40 which is devoted to its line of Type PV radio voltmeters.

The Reliance Electric & Engineering Company, Cleveland, Ohio, has issued bulletin No. 2016 giving information on Reliance planer motors for reversing service. The book contains many interesting illustrations of applications of these motors and also has much valuable technical information.

The Sangamo Electric Company, Springfield, Ill., has issued a new catalog on Instrument Transformers. The book contains considerable valuable engineering information as well as performance curves and prices.

The Wagner Electric Corporation has just issued an interesting catalog of the "Pow-R-full" line of starterless motors. The book contains considerable useful information relative to this type of motor and will be sent upon application to the manufacturer.



W. W. Smart, superintendent of the Utah Power & Light Company's Logan, Utah, plant on Logan River, is seen in the above picture proudly displaying a large German Brown trout, caught by him on July 17 in the company's reservoir near its Logan plant. The fish actually weighed 25 lb. 5¼ oz. and measured 37½ in. in length, and is believed to be the largest trout of this species ever caught in the United States. The catch was made with an ordinary fly-rod, using a "bull-head" as bait. (Immediately upon receipt of the above photograph, the Editors purchased tickets for Logan in order to arrive before the crowd that is to follow upon publication of the picture. Too bad we've gotten a head start.)

The Westinghouse Electric & Manufacturing Company has recently published a 56-page booklet entitled "High Voltage Porcelain Insulators—Their Design and Manufacture." This publication has been issued for the purpose of presenting to engineers responsible for the design, installation and maintenance of high-voltage transmission systems, information describing the design and manufacture of porcelain insulators. The publication is so comprehensive that it is essentially a text book on the subject of high voltage insulators.

The Bakelite Corporation, New York City, has issued a new catalog on moulded Bakelite. The book contains many illustrations of the different forms and uses of this material.

The Surgex Manufacturing Company, Oakland, Calif., has brought out a new electric dish washer for commercial use which is stated to have many advantages over types of machines now in use.

The Stephens-Adamson Company, Aurora, Ill., has issued a new booklet descriptive of electric car pulleys, conveyor equipment, crushers and the various other lines manufactured by the company.

The National Metal Moulding Company, Pittsburgh, Pa., has issued a new circular to the trade descriptive of cable and loom boxes, saddles and box bars. The circular is illustrated and is descriptive of the application of these various devices.

Personals

Robert J. Graf, vice-president and secretary of H. M. Byllesby & Company, has been appointed president of the San Diego Consolidated Gas & Electric Company, San Diego, Calif. Mr. Graf's long association with Col. H. M. Byllesby, for whom he was for many



ROBERT J. GRAF

years private secretary, has made him familiar with all of the Byllesby projects on the Pacific Coast. Mr. Graf went to Chicago with Col. Byllesby when the latter founded his organization in 1902 and was first secretary of the company, an office he still holds in addition to being first vice-president. His ability in banking and finance has long been a recognized factor to the growth of the Byllesby organization and he has had full charge of the books, accounts, issuance of securities, trust deeds and indentures, etc. Mr. Graf has visited San Diego and the Pacific Coast on numerous occasions and is personally familiar with both the company and the territory served. While aggressive and direct he is at the same time democratic and what is popularly known as a good mixer. His recreation is golf.

A. J. Calloway, who for the last four years has been manager of the Salt Lake branch of the Western Electric Company, has been promoted to the management of the Indianapolis, Ind., office of the company. Mr. Calloway graduated from the University of Colorado in 1912, when he received a degree in electrical engineering. He has been connected with the Western Electric Company almost continually since his graduation, and prior to his connection with the Salt Lake office he was connected with the San Francisco, Calif., and Chicago, Ill., offices. Mr. Calloway has been very active in civic affairs during his residence in Salt Lake City.

C. Randolph Currier has taken a position as sales engineer with S. Herbert Lanyon, manufacturers' representative, Call Building, San Francisco, Calif. Mr. Currier is an electrical engineer, having graduated with the class of 1924 from University of California.

J. J. Barry, vice-president and general manager of sales of the General Electric Company, Schenectady, N. Y., is visiting the Pacific Coast. He has spent some time in San Francisco, Calif., and will visit other Coast cities before returning to his headquarters.

P. F. Ross, Pacific Coast representative of the A. J. Lindemann & Hoverston Company, Milwaukee, Wis., manufacturers of the L. & H. line of electric ranges and appliances, is making an extended trip to Portland, Ore., Seattle and Tacoma, Wash., and other Northwestern points. Mr. Ross will also probably visit the factory before returning to San Francisco.

E. W. Hewitt, manager of the Airdry Company of California, is visiting the factory of the company at Chicago, Ill.

H. H. Allison, for some time illumination sales engineer of the Pacific Gas and Electric Company, San Francisco, Calif., and more recently connected with the sales force of the National Lamp Works, Oakland, Calif., has been made manager of the lighting department of the Electric Appliance Company, San Francisco.

N. M. Hope, formerly with the Electric Appliance Company, San Francisco, Calif., has joined the staff of the California Electric Construction Company, San Francisco.

H. H. Courtright, of the Valley Electrical Supply Company, Fresno, Calif., was in San Francisco early in the month in the interests of his company.

Carl A. Wolfrom has been made manager of the Provo division of the Utah Power & Light Company, Provo, Utah, succeeding Ray Timmerman, resigned.

L. R. Graham, of the Stevens Sales Company, Salt Lake City, Utah, recently attended the meeting of jobbers' salesmen of the National Lamp Works held at Cleveland, Ohio.

T. E. Fitzsimons, representative of the Westinghouse Lamp Company at Denver, Colo., has been transferred to the Los Angeles, Calif., office of that company.

Ray Timmerman, manager of the Provo division of the Utah Power & Light Company, has resigned to accept a position with the Adirondack Power & Light Corporation, Schenectady, N. Y.

John T. Janette, manufacturer of electric motors, Chicago, Ill., was a recent visitor to San Francisco, Calif.

E. C. Gribble, president of the Electrical Specialty Company, San Francisco, Calif., has just returned from an automobile trip to Portland, Ore., Seattle, Wash., and various Canadian points. At Seattle Mr. Gribble met his brother, W. A. Gribble, Northwestern manager for the company, and spent some time with him.

Emory Sherwin, who for two years has been assistant superintendent of electric distribution and transmission, for the San Diego Consolidated Gas & Electric Company, San Diego, Calif., was transferred in July to be assistant superintendent of electric production of the same company. Mr. Sherwin was advanced to fill the vacancy made by the departure of M. C. Wheyland, who went with H. H. Jones to Minneapolis, Minn. A. S. Glasgow, former district agent at Oceanside and recently Mr. Sherwin's assistant, was advanced to be assistant superintendent of electric distribution.

Wm. H. Talbott, superintendent of the electric meter department of the San Diego Consolidated Gas & Electric Company, San Diego, Calif., has been appointed chairman of the safety rules committee of the technical section, Pacific Coast Electrical Association.

Arthur A. Brown, manager of syndicate operations of the Westinghouse Electric & Manufacturing Company, New York City, is visiting on the Pacific Coast in the interests of the Lighting Educational Committee.

J. N. Hickerson, of the General Electric Company, is making a tour of the Pacific Coast in connection with the activities of the Lighting Educational Committee.

Thomas W. Nixon has been appointed successor to T. E. Fitzsimons, of the Westinghouse Lamp Company, Denver, Colo., Mr. Fitzsimons having been transferred to the Los Angeles, Calif., office of the company.

Frederick H. Reid, former vice-president of the Southern Bell and Cumberland Telephone & Telegraph companies with headquarters at Atlanta, Ga., has been elected president of the Mountain States Telephone & Telegraph Company, with general offices in Denver, Colo. He has taken the place of Ben S. Read who assumes the presidency of the two southern companies with which Mr. Reid was connected. Mr. Reid, who took over his new responsibilities recently, began his telephone career with the Denver company more than twenty years ago as a clerk in the office of the general superintendent. He rose, in successive steps, to the positions of chief clerk to the superintendent, chief clerk to the general manager, assistant to the vice-president and general manager, assistant general manager and finally general manager. This position



FREDERICK H. REID

he held when, two years ago, he was elected vice-president of the two southern companies. He is one of the youngest executives in the Bell system to be made president and one of the oldest in experience. The territory embraced by the Mountain States Telephone & Telegraph includes Colorado, Wyoming, Montana, Utah, Idaho, Arizona, New Mexico and the El Paso territory. This district comprises 26 per cent of the area of the entire country. Mr. Reid is a native of Scotland but came to Denver with his parents when he was ten years old. He received his early education in Denver schools.

William H. Rose, of the Southern California Edison Company, Los Angeles, Calif., was recently in San Francisco on business.

Alex. Miltenberger has been made Western executive representative of the Wagner Electric Corporation, St. Louis, Mo.

Clare N. Stannard, vice-president and general manager of the Public Service Company of Colorado, Denver, Colo., is on an extended trip to the East. Mr. Stannard will visit the Eastern offices of the company before returning to Denver.

Richard A. Hart was elected president of the Utah Society of Engineers, at the annual election held jointly with the Utah section of the American Institute of Electrical Engineers. Mr. Hart graduated from the University of Utah in 1907, with a B.S. degree in electrical engineering. For a number of months following his graduation he was located at Schenectady, N. Y., with the General Electric Company. In the summer of 1908 he returned to Utah to take up work with the state engineering department in connection with reclamation projects on the Spanish Fork River. In June, 1908, he became associated with the United States Department of Agriculture, handling engineering work in connection with the drainage of lands, with which department he has been connected ever since. In 1912 Mr. Hart secured his professional degree in civil engineering at the University of Utah, and was later appointed senior drainage engineer in the United States Department of Agriculture, with headquarters at Salt Lake City, which position he now holds. In his capacity of senior drainage engineer Mr. Hart engages in research work as to the possibilities of reclaiming arid and alkali



RICHARD A. HART

lands; the organization of drainage districts for conducting such work on a community basis on a large scale; the rendering of consulting aid to individuals and projects in drainage and reclamation; rendering of consulting aid in the formation of laws under which drainage districts can be organized, wording of contracts, and also the financing of projects and the aiding of boards of directors in the administration of projects. Mr. Hart is active in the affairs of the Utah Society of Engineers and the Engineering Council of Utah, and is also a member of the American Society of Civil Engineers.

J. M. Hickerson, of the General Electric Company, Schenectady, N. Y., is a recent visitor to San Francisco, Calif.

Samuel Kahn, general manager of the Western States Gas & Electric Company, Stockton, Calif., was recently in San Francisco on business for his company.

P. H. Booth, Pacific Coast sales manager of the Edison Electric Appliance Company, Los Angeles, Calif., was recently in San Francisco. During his stay in that city Mr. Booth attended a meeting of the Lighting Educational Committee.

J. G. Creighton, of Creighton, Morris, McCorkle Company, Portland, Ore., was recently in San Francisco, Calif., on business. Mr. Creighton was formerly connected with the Oakland, Calif., office of the company but has for about two years been manager of the northern district.

Eric Wilburn Smith, central station salesman and assistant manager of the General Electric Company, St. Louis, Mo., has joined the staff of Ray D. Lillibridge, Inc., engineers and general advertising agents, New York City. Mr. Smith will devote himself particularly to furthering the interest of the company's clients in the electric light and power industry.

J. P. Pulliam, president, A. G. Carson, assistant to the president of the Eastern Oregon Light & Power Company, and **John Soevig**, of Soevig & Hiscox, all of Milwaukee, Wis., were recently in eastern Oregon viewing the properties of the company.

David E. Drake, for over fifty years in the electrical business, thirty-four of which were spent in the employ of the Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has been retired at the age of seventy-six. Mr. Drake will make his home at San Diego, Calif.

Richard T. Sullivan, of the Tacoma Light & Power Company, Tacoma, Wash., was a recent visitor to San Francisco, Calif.

John J. O'Brien, formerly vice-president of H. M. Byllesby & Company in special charge of financing, has been elected president of that company to succeed the late Colonel H. M. Byllesby. He was also made president of the Standard Gas & Electric Company and of the Northern States Power Company, both of Chicago, Ill. Mr. O'Brien was born in Chicago in 188, and received his education in the public schools of that city. In 1887 he took his first position in the business world with the Pullman Company. Two years later he joined the United Edison Manufacturing Company, later known as the Edison General Electric Company, which in 1892 was merged with the Thomson-Houston Electric Company. The final outcome of that consolidation was the present General Electric Company, and Mr. O'Brien was in charge of accounting in its Chicago office in 1902 when he left to become associated with Colonel Byllesby. H. M. Byllesby & Company was organized at that time, and Mr. O'Brien became treasurer and general auditor. Since then he has been active in the upbuilding of the company, and has served with the colonel and Arthur S. Huey, recently elected chairman of the board of directors, on the executive committee vested with full administrative and executive authority over the affairs of the company.

Amos H. Feely has recently been employed as secretary of the Electrical Contractors' and Dealers' Association of San Diego, Calif. Mr. Feely was born in Brooklyn, N. Y., March 4, 1884. He entered the electrical industry in November, 1897, being employed by Henry Krantz, now the H. Krantz Manufacturing Company. In November, 1898, he entered the employ of the Ward-Leonard Electric Company at Bronxville, N. Y., where he remained until September, 1902. He then changed to inside construction work for Charles L.



AMOS H. FEELY

Eidlitz & Company, obtaining his first experience in building construction on the New York Stock Exchange. Mr. Feely came to California in 1908. From 1918 to 1921 he represented the Marine Electrical Workers at San Francisco, Calif. During the last two years he has represented Local Union No. 340 in Sacramento, which position he resigned before affiliating himself with the San Diego contractors' association.

Ernest L. Dee, of the Salt Lake City, Utah, office of the Edison Lamp Works of the General Electric Company, recently attended the meeting of district lamp managers held at Camp Edison, Association Island.

Obituary

John S. Eastwood, originator of the concrete multiple arch dam, was drowned in the Kings River on Aug. 10. Mr. Eastwood was internationally known as an engineer and won prominence in the engineering world through his adaption of the arch to concrete dams. Mr. Eastwood had contributed frequently to the Journal of Electricity, presenting articles of engineering interest.

Leon M. Hall, Nevada mining engineer and the man who electrified the mines and mills on the Comstock Lode, died recently at Virginia City, Nev. Mr. Hall was fifty-eight years old and had for several years been active in Nevada mining circles.

Trade Outlook

San Francisco

Reduced lamp prices, effective July 1, are stimulating retail sales, and dealers are making added effort to increase volume and so offset the shrinkage in their contract sales realization. Salesmen in all lines report better orders, attributed partly to rumors of price increases and the resultant reaction on somewhat depleted stocks. There was good movement of conduit during July, in larger sizes from 1½ to 3 in.

Activity in the building of houses, stores and manufacturing plants is resulting in increasing business in hardware, plumbing and electrical lines, with sales volume about on a par with that of last year. Improvement is noted in local wholesale and retail business in general, though in certain lines it continues rather quiet. At the same time, orders for fall delivery are encouraging. Good prices are being received for fruit and truck crops, with consequent favorable reaction on buying, which, while still conservative, is better, particularly for fall merchandise.

Export business during the month has increased, good gains being shown in trade both with Mexico and Hawaii. In general, it is felt that the situation throughout this district has made considerable advance toward recovery from the previous dullness.

Los Angeles

Business in Los Angeles showed improvement during the month of July over the previous month, this being true in nearly all retail lines as well as wholesale.

The power shortage has hindered the sale of small electrical appliances to a certain extent, but on the other hand has increased the sale of generating equipment, as shown by the added sales volume of this type of apparatus by the manufacturers. Jobbers and wholesalers report better conditions prevailing than formerly. Radio sales took a decided jump during the month and are much improved over the preceding month, and this in a measure offsets the decrease in the sale of electrical appliances.

Labor conditions are improved, while the agricultural situation is holding its own and is above normal.

Improvement is reported by manufacturers, wholesalers and retailers of men's clothing, partly attributed, on the part of wholesalers, to the necessity for replenishing of retail stocks. Buying continues on a conservative basis. Conditions are less favorable in the women's clothing trade, the sales volume having decreased somewhat. Collections are reported fair to good.

Portland

Whatever changes there have been during the past few weeks have been for the better; in most lines, however, no change is apparent. The seriousness of the unprecedented drought is daily becoming more noticeable. The effect

on the power companies is to compel a larger percentage of steam generation. No cases have been reported of the inability of power companies to supply all demands made upon them, though their operating expenses are greatly increased. Most crops, while not equal to last year's yield, will be greater than was expected.

In spite of a somewhat larger lumber output than that of a few weeks ago, due to several large mills starting operations again, prices remain at about the same level. About 90 per cent of the mills of the Northwest are now operating, most of them at reduced capacity. Residence construction continues to go forward in all parts of the city, and during July permits for that type of building constituted more than half the total. As a whole, the figures represent a gain of about 30 per cent over the corresponding period of last year.

Bank clearings for July showed a gain of about 8 per cent as against those for the same month a year ago.

Salt Lake City

Recent advances in the prices of silver, lead and copper promise a remarkable period of prosperity for the mining industry in the Intermountain section, although this industry is already in a very healthy condition. This favorable situation, particularly in the mining field, is reflected to a considerable degree in general business conditions. In this connection it is interesting to note that statistics of 1923 production of silver and gold compiled by the United States mint department and the Geological Survey establish the fact that Utah, with an output of 20,479,550 oz. of silver, was the largest producer of this metal.

Lack of moisture is still causing some concern in the agricultural territory and among the cattle and sheep men, although this situation has been relieved somewhat by rains in some sections, and the outlook is not considered serious. From present indications crops will be fair and prices good.

Retail merchants generally report a quiet period in business at this time. Building material and electrical supplies, however, are active, due to a considerable amount of home building which is under way.

A spirit of optimism prevails, and the general outlook is favorable.

Seattle

A review of the lumber situation for the last week in July, based on reports from 120 mills, shows sales well above production. The feeling among lumber manufacturers regarding fall trade prospects continues rather optimistic. The cargo markets continue dull.

Wholesalers in various lines are optimistic over prospects for the last half of the year. Orders placed by retail distributors show faith in the winter months in nearly all lines. While ordering is for short periods, as has

been the case in post-war years, the volume evidences calculations based on a good turnover.

No cessation of local building activity is noted during the past two weeks, and architects generally report a considerable volume of work in the plan stage that is expected to be under construction in Seattle during the fall.

Radio equipment and supplies have featured the recent electrical sales, with demand for this equipment hard to fill because of delayed shipments from the Eastern factories. Volume is expected to increase materially during the fall and winter months, and dealers are endeavoring to stock up at present. Sales to central stations for replacements and extensions have been active.

Denver

Reports from the agricultural districts are more encouraging than for a number of years. Good crops at present market prices are strengthening the rural banking situation. Because of the bumper beet crop, there is considerable concern as to the outcome of the sugar tariff.

Business as a whole is continuing in splendid fashion. Retail sales are holding up in staple lines. Electrical merchandise campaigns are proving very successful. A recent spell of hot weather materially aided the fan business for the season. Radio is marking time but plans are being made for a big rush in the fall when the new superpower broadcasting station will be opened here.

Activity continues in the oil fields of northern Colorado. Considerable interest has been aroused by the recent discovery of natural gas and the possibility of its being piped to the principal cities of the state.

Building permits issued during the first seven months of the present year are greater by \$1,971,600 than the permits issued during the same period of 1923. Permits for July totaled \$2,174,450.

Spokane

For the first six months of 1924 bank clearings in Spokane showed a slight increase over those of the same period of 1923, and building permits showed an increase of 50 per cent. A general study of business statistics indicates that wholesale houses have realized gains of from 5 per cent to 15 per cent for the first five months of 1924, as compared with same period in 1923.

Wheat sales have been stimulated by the steady advance in price. The reports now coming in from the harvesting centers indicate in every case yields greater than had been anticipated. Profits, due to higher price and lower labor costs, are reported nearly twice as great per acre as in 1923, in spite of the smaller yield. The fruit crop for the whole Inland Empire will also be materially less than last year, but better profits are expected.

Woodworking plants are working at fair output, with a tendency toward reduction. The general feeling is that demand and prices will be improved by autumn.

Mining operations continue on an excellent basis, with no indications of reductions in output. A great deal of new development work is in progress among silver lead properties, and the local stock market is brisk.

Journal of Electricity

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September 1, 1924

San Francisco

HUSBAND—"How come all the pep?
You're as fresh as a daisy,
and today was washday."

HIS WIFE—"Well, here's the last of it.
But why should washday
worry any woman who
has a Meadows."



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THIS is an unusual issue of this publication. It is inspired by an unusual occasion. After what seemed to be a conclusive verdict of the people, another attempt is to be made in California to turn the great power systems over to the politicians, while in Washington through the so-called Bone-Erickson "Free" Power Bill the City of Seattle is attempting to convert its ignominious failure in municipal ownership into an obligation of the entire state.

If the electorate of these two states can be informed as to the true inwardness of these two measures, the verdict against them at the polls will be overwhelming. The problem lies in the difficulty of informing the voters.

This issue is the contribution of the Journal of Electricity to this end. Its circulation within the industry is nearly ten thousand. If every recipient of this message will read, study, form his own conclusions; if he will then discharge his own responsibilities to the industry from which he gains his livelihood by spreading the gospel within his own circle, all will be well. Let everyone roll up his sleeves, and go to work.

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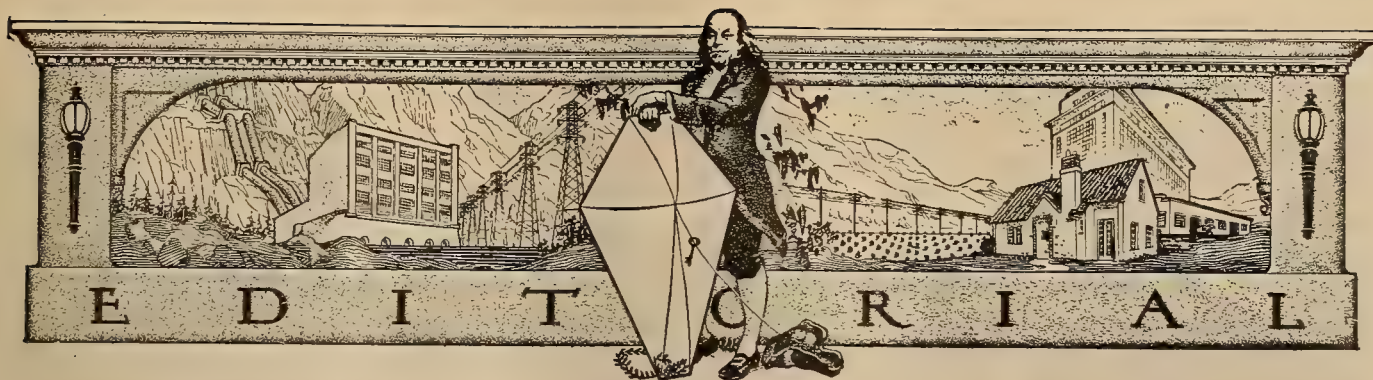
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The Function of Government

SHALL government—national, state or municipal—as a political corporation, engage in business and industrial endeavor? Shall it attempt to achieve by methods unsound in principle and untested by precedent results that are being obtained in a better way by existing agencies? Herein are the fundamental arguments against the California Water and Power Act and the Bone-Erickson Bill initiated in Washington.

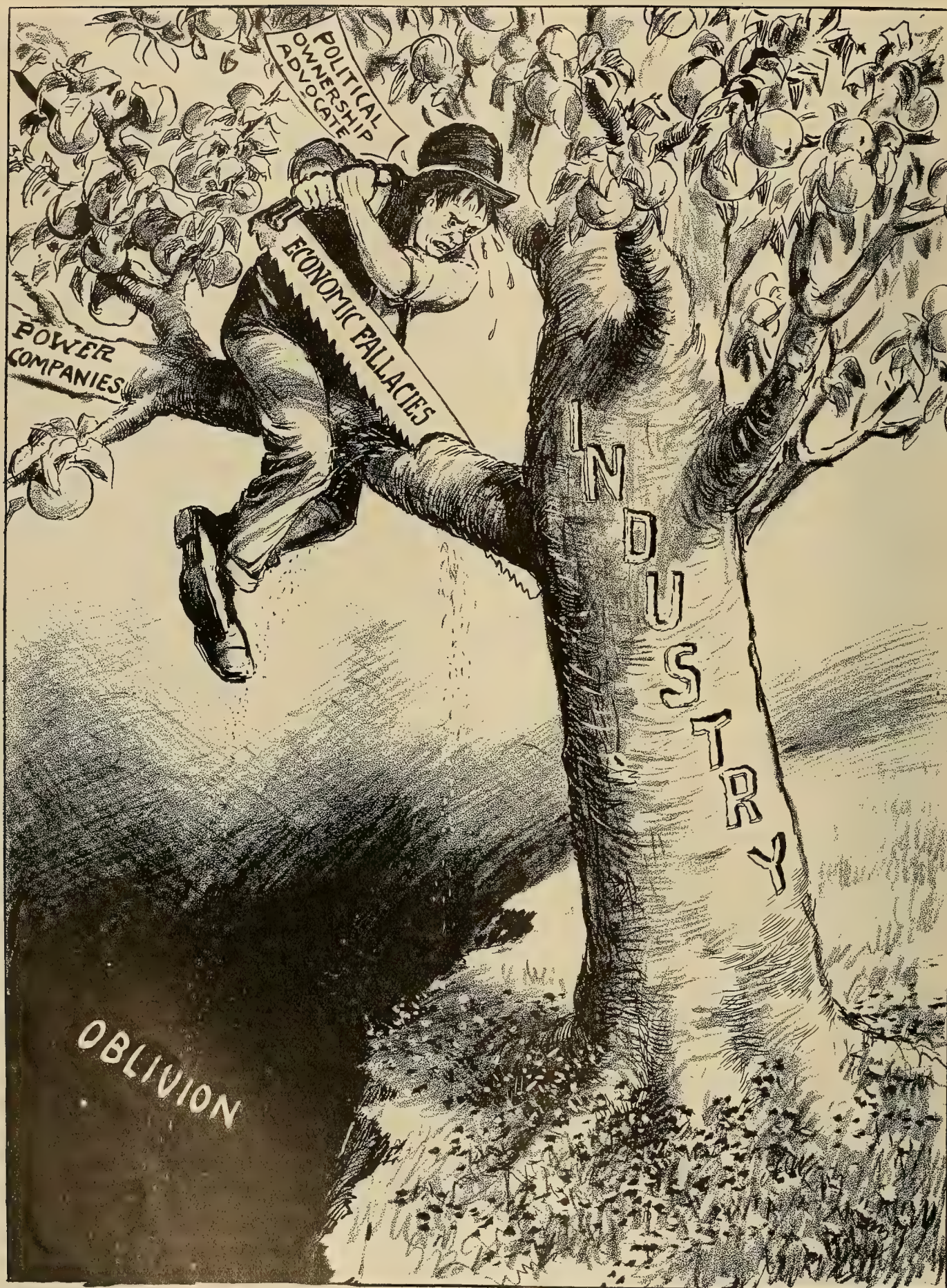
FROM every point of view—economic, social and political—the premises upon which these measures are based are illogical and unsound. They propose adventures in socialism that, if carried out, will disrupt economic life and bring financial loss and suffering.

ECONOMICALLY the measures are wrong because they attack a progressive industry that is yet in its infancy. They would remove from the tax rolls property valued at hundreds of millions of dollars, distributing the consequent tax burden over other industries and the individual taxpayers. Socially they are wrong because they threaten the equality

of opportunity of our citizens and would stifle the individual initiative and enterprise that has made possible the industrial progress of this nation. Politically they are wrong because they propose to burden our governmental institutions with duties for which they were neither designed nor intended. They would mix an intricate business with politics; create a bureaucratic monopoly, politically manned and operated.

TO enlarge upon these arguments is but to repeat statements from the pages which follow,—pages in which every phase of this vital subject is discussed by men whose word can neither be questioned nor discredited.

AFTER all is said and done there is this to be remembered: Admit that either of these measures is sound and we have endorsed every claim of socialism. Pass either measure and no industry will be safe, for socialism aims at the destruction of organized society. And behind the menace of these bills lurks the spectre of communism. Shall either California or Washington jeopardize their future under these circumstances? NO!



S U I C I D E !

The Case Against Political Ownership

By M. H. Aylesworth*

Managing Director, National Electric Light Association,
New York, N. Y.

RECENTLY the Public Ownership League of America produced a map entitled "Public or Government Owned Superpower." This map showed by states the number of municipal plants in each state, and a heavy black line was drawn from state to state connecting all the municipal plants of the country together. Those of the electrical industry who were fortunate enough to see this so-called "Government Owned Superpower" map no doubt laughed heartily. The map, however, was not made for the electrical industry, but was intended for popular consumption, and was widely circularized among those possessing socialistic souls and to the radical press of the country. Millions of uninformed persons who saw this map in the socialistic and radical press must have felt that government ownership of superpower was at hand.

However, the Public Ownership League neglected to state that these municipal plants represented about 4 per cent of the electrical output of the nation, and that approximately 96 per cent is produced by privately owned electric light and power systems.

The League also failed to show that 80 per cent of these municipal plants, shown on the map, would immediately cease to exist in the superpower system, not on account of the inefficient political management alone, but mainly because their equipment is for the most part obsolete and not suitable for any superpower system.

Those millions who are fortunate enough to live in California will be surprised to learn that this map failed to disclose the superpower system of California other than those plants that are municipally owned and operated. This is also true of the other Pacific Coast states. The facts are that about 95 per cent of the electrical generating capacity in California is in company systems, and that company systems generate a proportionate amount of the power



M. H. AYLESWORTH

says, "It is the duty of every man and woman engaged in the public utility industry to warn the people of the dangerous doctrines of socialism which will be preached during the campaigns which will soon be waged."

are only 27 cities of over 10,000 population served exclusively by municipal plants. There are approximately 700 cities of over 10,000 population served exclusively by private companies. The map did not show that more than 700 municipal plants have been abandoned to receive a better service from the electric light and power companies.

Shortly after this map was issued the Public Ownership League of America held a convention in Washington, D. C. The attendance at one meeting consisted of the speaker, secretary of the League, two reporters, janitor, and one unknown person whom we will assume was the ultimate consumer. The League announced its purpose of franking through friendly senators and congressmen arguments in favor of government ownership, federal, state and municipal. During the week several preachers, school teachers and professors inspired with this socialistic or communistic spirit spoke quite generally in favor of government in business, directing particular attention to the subject of electricity.

I appreciate that all of this makes you smile, yet when I inform you that the socialistic and radical press of the country produced the map and many of the speeches delivered, and editorially commented on this new program, you will realize more fully perhaps

in Oregon and Washington. Another interesting feature which did not appear on the government ownership map was the fact that 50 per cent of the generating capacity of company systems is used in generating electricity for industry and power, and that 98 per cent of all industries purchasing electrical power are supplied from company systems, while 2 per cent purchase from municipal plants.

This map did not show that of the two thousand municipal plants existing in this country only 113 are located in places of over 10,000 population, that 35 of these purchase power from private companies, and that 42 of these 113 plants furnished street lighting only, and 14 of these purchase power from the local company. There

*Excerpts from an address before the Pacific Coast Electrical Association, Coronado, Calif., June 20, 1924.

the menace of malicious information and unsound argument.

How Eminent Men View Government Ownership

True enough, the late President Harding made the solemn announcement to the people that, "there should be less government in business and more business in government." Even those men who are appointed by the government to safeguard the inter-



WILLIAM H. TAFT

Ex-President and Chief Justice of the United States Supreme Court, has declared that "the intervention of politics always increases the cost of operation and leads to unwise management of utilities."

ship and operation may appear to be successful, but we hold that if the real facts be ascertained and the same test applied to the publicly owned and operated utility as is applied by regulatory bodies to the privately owned and operated utility, the general result will apply in all instances.

It stands to reason that no business enterprise dependent upon the varying changes of political thought can be operated by the public in as efficient, methodical and careful a manner as can a similar business enterprise managed by a body of men who have their capital invested therein or who represent those who have invested their fortunes. . . .

To those who believe that municipal ownership is a panacea for many ills and will result in a cheaper service, the following comment of Ex-President, now Chief Justice William H. Taft, is commended. The Chief Justice said:

There are those who believe the situation can be relieved only by municipal ownership. This seems to many and to myself to be a short-sighted conclusion.

Such a change of ownership will not reduce the cost of operation. Instead, our experience is that it will greatly increase if ownership is to include municipal operation. The intervention of politics always increases the cost of operation, and leads to unwise management of utilities.

Many who favor municipal operation admit that the present system cannot be continued by municipal and state governments without a constant loss. They propose that the losses be made up by taxation. But our experience in public control of that kind of activity and complicated business management has not been fortunate. It foreshadows such lack of economy and increase of cost of operation as to make the change most unwise. . . .

Nor is Charles G. Dawes, recently nominated by the Republican party for the vice-presidency, and former Comptroller of the United States Currency, any more optimistic on the subject of government ownership. General Dawes expresses himself as follows:

Municipal ownership, say the demagogues, means ownership of the public utilities by the public, and their operation at cost in the interest of the public. **THIS DEFINITION IS FALSE.**

ests of the public recognize how illy equipped government is to carry on a business like ours. The Committee on Public Ownership of the National Association of Railway and Utility Commissioners, which is composed of public service commissioners whose duty it is to regulate public utilities (in some states municipally owned), reported:

We think it may be admitted as a general proposition that public ownership and operation has failed wherever it has been properly tested. We recognize the fact that in some special locations public owner-

What municipal ownership means is ownership by the public, but operation by the political faction in control for the **SOLE BENEFIT OF THE PARTY LEADERS AND THEIR HENCHMEN**, without regard to public interest and with **TOTAL DISREGARD FOR THE SANCTITY OF THE PUBLIC TREASURY.**

Public operation, wherever it has been tried, has meant political operation, and political operation has always been and will always be fatal to the interests of the public. . . .

These sentiments and beliefs are not only held by Republicans, they are shared by many eminent Democrats as well. Edward N. Hurley, former Chairman, United States Shipping Board, and Federal Trade Commissioner, has said:

No community can receive the public utility services to which it is entitled under municipal or government management.

The cause for the failure of municipal ownership lies in the human element. No city, state or national enterprise can expect to obtain from management, or from man, an average of more than fifty per cent of personal efficiency or more than fifty per cent of personal interest in their work, and it must be remembered that this percentage will gradually decrease the longer the individual manager or individual employee is in government service.

Government operation in industrial service is a flat failure from a "service to the public" standpoint. This is not only true in America, but it is a proved fact throughout the world.

I am convinced that it will be found that the entire lack of personal efficiency under municipal or governmental industrial ownership spells financial failure for the enterprise. . . .

Judge A. B. Anderson, of the United States Court at Indianapolis, announced the following indictment against government and municipal ownership:

Don't you know that it is impossible for the government to run public utilities without getting them into politics?

They cannot be run by the government, because, if they are, nobody would have an interest in them but the politicians, and development would cease.

Public utilities must be run by somebody who owns them and has a real interest in seeing that they grow so people may be really served. . . .

More recently Haley Fiske, president of the Metropolitan Life Insurance Company, the largest in the world, in a message personally addressed to millions of policy holders, said:

Plans for municipal, state or federal ownership of public utilities often sound well as presented by their advocates. But before assenting to them every policy holder should examine them carefully, asking himself how political ownership can possibly give him results to compare with those attained through private ownership. Your life insurance company has invested in the building of highways, schools and in fact all community development.

You should be proud of your participation in the financial and social progress of your country. The municipality, the state and federal government have enough to do in financing the proper government agencies.

The late President Harding said truthfully: "There should be less government in business and more business in government."

The ownership of the electric light and power companies is now in the hands of more than 2,000,000 direct investors in public utility stocks, and indirectly in the hands of millions more of bank depositors and holders of life insurance policies



CHARLES G. DAWES

has said that "municipal ownership means ownership by the public, but operation by the political faction in power for the sole benefit of the party leaders and their henchmen, without regard to public interest and with total disregard for the sanctity of the public treasury."

through their ownership of public utility bonds.

This is true people's ownership under proper public regulation, and the function of government is not to own and operate such utilities but to regulate them under the police powers of the state. . . .

The national casualty and automobile insurance companies have sent to more than fifty thousand agents for distribution to policy holders the following message which deals with this very situation:

The foundation of our national prosperity rests upon private enterprise. It ought to be quite clear that if such great institutions as the electric light and power industry, the business of transportation and the other similar public service institutions be confiscated by the government, forced out of business by government competition or subjected to repressive and unreasonable regulation by the government, every property owner, particularly the owner of insurance policies, will suffer materially.

The result is as inevitable as death and taxes. . . .

What Is Superpower?

Because most of the people do not understand what the term "superpower" means, socialistic

and political propagandists have taken advantage of this situation, and have painted a picture which no camera could produce, for this picture is beyond the wildest dreams of electrical engineers.

Only recently an article appeared in *Colliers*, *The National Weekly*, which has looked very carefully into the present and future electrical development. Its author, William Slavens McNutt, the eminent correspondent and journalist, said:

And then Superpower! Think what that must mean! Certainly something approximating the miraculous. And, as the most commonly desired miracle is the purchase of a dollar with a dime, or some equivalent transaction, the vision of superpower in the uninformed—and, in some cases, over-informed and misinformed—public mind, took shape as the most recent development of the oldest common dream, the pathetic, futile, exasperating dream of something for nothing. Through the agency of superpower we were to get electric light and power for approximately nothing.

That dream is bunk. No one's house is going to be lighted and no one's factory is going to be run for nothing, or near to nothing, through the development of the superpower idea.

No matter how fully the superpower is developed, and no matter whether the job be done by private capital or public ownership, or by both—either in competition or cooperation—your children's children are going to be bothered answering the door bell when the man from the electric light company calls to read the meter.

It costs money to develop, transmit, and distribute power, no matter from what source it may be originally derived. . . .

After commenting on the national cooperative program between the farm agencies, the National Electric Light Association, state agricultural colleges, and the Department of Agriculture, in bringing electricity to the farm, Mr. McNutt, speaking of the term "superpower" systems, states:

The main question is how they shall be educated, so to speak—in private or public schools. That is to say, whether they shall be developed by private interests and private money under public supervision, or taken altogether in hand by some

government organization, some sort of public ownership orphan asylum, and raised independent of the influence of individual or corporate wealth.

I lack the space here to go into the merits of the two opposing systems. But in spite of all good arguments that public ownership advocates can command, the odds are somewhat around a thousand to one that superpower in this country will be developed and operated by private capital, more or less regulated by the government. . . .

The electrical industry of the United States can never be justly accused of lack of vision or the courage to build on a sound financial structure. The electrical industry today generates approximately sixty billion kilowatt-hours—the present annual production of electricity exceeding the entire output of the first twenty-seven years of its existence.

Some of the greatest achievements of electrical development have taken place on the Pacific Coast. Thousands of miles from the money markets of the nation, hundreds of thousands of Americans have placed their savings in the hands of the executives of the electric light and power companies, so that the present superpower systems could be built, and the marvelous development now taking place on the Pacific Coast shall soon bring electrical energy which will keep pace—yes—exceed your wonderful growth which has surpassed records of any other region!

Electricity Has Revolutionized Agriculture

The nation's engineers, and in fact the entire electrical industry, is watching with keen interest the revolutionizing of agriculture through the use of electricity.

People who know the Pacific Coast do not look upon it as a national playground or a moving picture colony. The foremost of its achievements is the development of agricultural lands, producing highly intensified and varied crops, and this accomplishment is looked upon by the nation as almost a miracle. The farmers of this region will be first to admit that electricity has played a most important part in the development of the West. Senator Arthur Capper of Kansas, and a representative of the so-called Farm Bloc in Congress, in addressing the convention of the National Electric Light Association, said:

Because of the past record of your industry, showing that since 1902 the total generation increased from 2,507,000,000 kw-hr. to 55,927,000,000 kw-hr.; that the generating capacity of the industry has increased from 1,212,750 kw.; that the total number of customers of electric light and power companies has increased from 1,465,000 to 13,357,000, and that capital invested in such enterprises has increased from \$504,704,000 to the stupendous total of \$5,800,000,000, it is plainly evident that as Cappy Ricks would say, "You folks are go-getters."

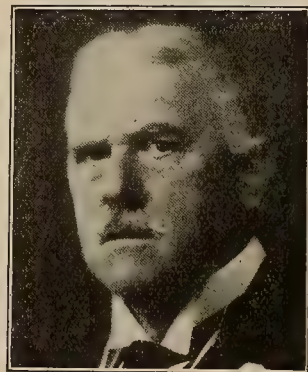
Because of that record, I am sanguine to believe that the application of electrical power to agriculture for the mutual benefit of the farm, the electric light and power industry, and the nation as a whole, is in hands that may be trusted to find a mutually advantageous solution.

It is not an indulgence of extravagant fancy to believe



EDWARD N. HURLEY

former chairman of the United States Shipping Board believes that "it will be found that the entire lack of personal efficiency under municipal or governmental industrial ownership spells financial failure for the enterprise."



HALEY FISKE

president of the Metropolitan Life Insurance Company, has stated that "the function of government is not to own and operate utilities but to regulate them under the police powers of the state."

that an industry privately owned and efficiently conducted and required by law to maintain certain standards and carry on its business as economically as possible and for the greatest good of the community, will accomplish definite and helpful results in bringing electricity to the farm when it has accomplished so many remarkable things in a few years in its other activities.

So it is that we discover that the age of superpower actually is here; that it is not a figment of the imagination—a thing which may come to pass in the future, but that it has arrived and that necessarily it must experience gradual and consistent growth. . . .

The Federal Power Act was enacted during my service in the Senate. I believe in that law and in its provisions. Already its beneficial effects have been proved.

Under that law projects aggregating in excess of 2,250,000 primary horsepower are under construction, and the applications on file with the Federal Power Commission contemplate the development of approximately twenty million horsepower.

It is estimated that capital for the development of these projects will exceed eight hundred million dollars, and that transmission and distribution systems for these projects will involve an additional estimated expenditure in excess of five billion dollars.

This means that applications already on file with the Federal Power Commission will involve an ultimate investment of approximately the same capital as that already invested in your great industry.

The revolutionizing of

any industry cannot be accomplished quickly, but must be done slowly, if serious and costly mistakes are to be avoided.

Careful detailed studies of the industry must be made by men trained and qualified to make them, and changes made only when careful study shows they should be made. Only in this way can any new enterprise or development be directed intelligently and economically, and in joining purpose with agricultural associations to make such study of all phases of the application of electricity to the farm, the National Electric Light Association, I believe, is contributing measurably to the ultimate great advantage of both agriculture and the electrical industry.

Permit me to digress from these pleasant speculations, to express my congratulation to you as members of the National Electric Light Association for your vision and foresight in adopting the policy of inviting your workers and employees to become sharers in your industry and because you have also invited the participation of more than a million citizens as shareholders in your investments.

As a result of this policy your industry, the common servant of the community, is becoming in an increasing degree a great community enterprise. . . .

Private Industry Ready to Develop Colorado River

As the electrical industry scans the records of recent noteworthy events, we find ourselves particularly proud of the courage and vision of those California electrical companies which have offered to raise the necessary capital and build the monumental structure at the Colorado River, which will provide for California's future growth and welfare.

Only private initiative could make such an offer with an ultimate benefit to the people, and yet, shortly thereafter the yelps of politicians could be heard and an immediate demand was made that the government finance this great project and operate it. It must be remembered that this is a day and age when many desire the government to do everything.

They seem to feel that the government owes everybody a living.

Recently one disgusted United States Senator who stood for a definite program on government economy said that unless the public awakened to the true condition of affairs, he would be inclined to introduce a bill to pay all the people's taxes from the treasury of the government. I believe some public ownership advocates with the touch of socialism in their souls would earnestly argue for such a program.

The Federal Power Commission recently denounced the program of government ownership of the Colorado River development. After denouncing the proposition the Federal Power Commission said:

If the proposal in H.R. 2903 (the Swing bill) with respect to power development is not the first step in a general program of like undertakings, it can be justified only on the clear proof that peculiar conditions in this particular case—conditions not prevailing elsewhere—justify the federal government in taking action that it does not propose to take elsewhere.

Such action cannot rest on the ground that the federal treasury is the only available source of funds—for private funds are available now and have been for several years to undertake immediately such development as is justified by the needs of flood control, irrigation and energy supply—or on the ground that the territory to which the greater part of the power must be delivered is in any immediate need of added power, for that territory is already better supplied and at a cheaper rate than any similar territory in the United States.

It has been argued that the United States should finance this power development because with a lower interest rate, absence of profit and freedom from taxation, power could be delivered at a less cost than if developed by private capital.

This is by no means a necessary conclusion, but even if it were, electric power is only one element in industry, and if federal financing is justified in the present case on such grounds, it is similarly justified in all other cases and in all branches of industry.

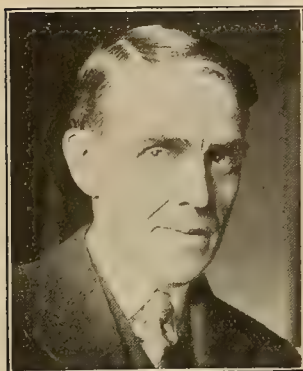
With the authority that exists in the states and in the United States to regulate and control private or municipal power development, distribution and sale, we do not believe that the United States should undertake such development unless it can be clearly shown that the development cannot otherwise be had. . . .

Secretary Herbert Hoover, at the recent convention of the National Electric Light Association, talked from his desk in Washington by telephone, amplified to the great attendance at Atlantic City, and broadcast by radio to five million Americans, said:

We have outdistanced all the world in our electrical development up to now. Today we have 27,000 telegraph stations, over 15,000,000 telephones, over 600 radio broadcasting stations, over 3,000,000 receiving sets with possibly 15,000,000 listeners; 9,000,000 homes are wired for lights, and we have the capacity to generate over 27,000,000 electrical horsepower.

The American wage earner has at his elbow 50 per cent more power than any of his competitors. In consequence, his product is greater, his wage higher, and his physical strain is less than any other.

This is itself a fitting tribute to the remarkable ability shown by the men in our whole electrical industry since the days of Mr. Edison's initial genius.



ARTHUR CAPPER,

United States Senator from Kansas, has said that "an industry privately owned and efficiently conducted and required by law to maintain certain standards and carry on its business as economically as possible and for the greatest good of the community will accomplish definite and helpful results in bringing electricity to the farm."



HERBERT C. HOOVER

has said, "I know of no greater disaster that could come to the workers in this industry than to place their fate in the hands of political jobbery. . . ."

Beyond all those evidences of their energy and ingenuity one great mark of organizing ability is that inventions have been made and improvements have been so generally applied that despite increasing cost of labor, coal and other materials there is but little if any increase in the cost of light and power to the consumer today over pre-war prices.

Yet we have seen in this same period the greatest electrical expansion in our history. It is a magnificent proof of the initiative and ingenuity of the men of this industry.

There are, however, special surroundings to a few of our great water powers which will require special action from a governmental point of view. We have special problems immediately before us in the development of the St. Lawrence and of the lower Colorado River, and in the development of Muscle Shoals.

I have not the time to discuss these special cases beyond giving it as my own opinion that where important interests of navigation, reclamation or flood control and international relations are involved, the government must be the stakeholder through the erection by the federal government of the primary works of construction despite its greater cost at the hands of government. But I have no taste for federal government operation and distribution of power.

We shall be able to protect the public interest through the terms of lease or through the regulatory power of our state commission.

This brings me to another phase of public relationship which has received some discussion. We have some persons who insist that the federal government should now undertake this superpower development. Not being a socialist I am not for it. Much of this discussion comes from lack of understanding of the practical aspect of the industry.

We find many people enthralled with the notions of "superpower" or "giant power" who conceive it a superimposed financial and industrial structure over all existing systems. At once they envisage a gigantic and grinding trust in the background.

As a matter of fact no superstructure of this sort is possible. Superpower means interconnection of systems and larger central stations—coal or water—scattered over the whole Union. It is in daily progress before our very eyes.

Interconnection does not imply capital consolidation or the building up of great trusts. It implies the sale and resale of power from one utility distribution system to another, and it implies cooperative action between utilities in the erection of central stations. It must embrace municipal plants as well as corporation plants. It implies no gigantic exploitation for that is impossible under state regulation of rates and profits.

But there are objections of more fundamental importance than this. As being one who believes that the progress of our nation can come only by preserving on one hand that vital initiative and enterprise of our people, and on the other an equality of opportunity to all, I necessarily do not favor the strangulation of both by the hand of bureaucracy and politics. No bureaucracy with a board of directors of 580 Congressmen and Senators would have made the electrical discoveries of the last 50 years or pioneered their application.

Our political system has not yet developed, and will not for generations to come, to a point where it will have either the capacity to choose skill or the assured probity to operate these implements. Our institutions will break down if we impose such burdens upon them. We have seen nothing in our industry to warrant us in the risk of stopping all progress by the deadening hand of the government.

I know of no greater disaster that could come to the workers in this industry than to place their fate in the hands of political jobbery or to stifle their individual opportunities through the leveling hand of bureaucracy which all this would bring about.

At the same time the regulation of natural monopolies by the government is a vital part of the preservation of this fundamental equality of opportunity to our citizens, for if the use of this great weapon of power were to fall unrestrained into the hands of dominant groups, then equality of opportunity would also disappear.

If we have not the capacity to regulate these great tools in public interest we much less possess the capacity to operate them on behalf of the federal government.

Republican Party Opposed to Nationalization of Public Utilities and Water Power

The Republican party in national convention at Cleveland recently took a decided position on the

ownership of water power and public utility development. Its platform reads:

Fully realizing the importance of transportation in both cost and service to our people, we favor the construction of the most feasible waterways from the Great Lakes to the Atlantic seaboard and the Gulf of Mexico, and the improvement and development of rivers, harbors and waterways, inland and coastwise, to the fullest extent justified by the present and potential tonnage available.

We favor a comprehensive survey of the conditions under which the flood waters of the Colorado River may be controlled and utilized for the benefit of the people of the states which border thereon.

The Federal Water Power Act establishes a national water power policy and the way has thereby been opened for the greatest water power development in history, under conditions which preserve initiative of our people, yet protect the public interests. The prosperity of the American nation rests on the vigor of private initiative, which has bred a spirit of independence and self-reliance. The Republican party stands now, as always, against all attempts to put the government into business.

American industry should not be compelled to struggle against government competition. The right of the government to regulate, supervise and control public utilities and public interests we believe should be strengthened, but we are firmly opposed to the nationalization or government ownership of public utilities. . . .

The public utilities including the steam railroads in the State of California pay more than forty million dollars annually in taxes in support of the state government. This sum would amount to a fair rate of interest on one billion dollars in state bonds, and is the basis of the financing of the governmental functions of this state.

The millions of security owners, insurance policy holders, and bank depositors who have a direct interest in the electric light and power companies in California, do not favor the proposal of the socialistic leaders who have inaugurated the proposed five hundred million dollar bond issue for state ownership of electric light and power and other industries.

The entire nation views with great interest the battle for socialism in California. It has been stated time and time again that the attempt to place state in industry and business is to be brought to an issue in California, and it is well understood that this movement is quite similar to that which took place in North Dakota and which has practically wrecked that state.

The thinking men and women of this country have confidence in the sober judgment of the people of California, and believe that the proposed bond issue which would place a tax burden on the people of California in excess of any other state will be defeated by a greater vote than that cast at the last election. They are equally confident that a similar fate awaits the Bone bill in Washington.

May I take this occasion to warn the industry that a continual program of honest information must be furnished to the people, and that it is the duty of every man and woman engaged in the public utility industry to inform the people of the dangerous doctrines of socialism which will be preached during the campaigns which will soon be waged. It is your duty to make this fight in the interests of your states and their people. Do not hesitate to state your case, and you will eventually receive the thanks of a grateful people.

Political Ownership of Utilities From a Woman's Point of View

By Mrs. Lewis A. McArthur
Portland, Ore.

NOWADAYS there is much talk about the influence of women in political and industrial life. There is little unanimity of opinion as to whether harm or benefit has resulted from the entrance of women into public affairs but most men apparently agree that women's activities do function in the general wear and tear on the social fabric.

How can women affect the trial of strength now going on between private ownership of public utilities and public ownership coupled with political operation? In other words, what part does the attitude of women play in this great contest? Women's attitude is doubly important in the electrical industry and it is in this that readers of this magazine are chiefly interested.

First, women's stand toward public ownership and political operation has value to the electrical industry because in her public capacity a woman's vote counts for as much as a man's.

Second, because women act in a private capacity as carriers of current thought, much as bees act as vehicles for the dissemination of pollen and frequently with as little consciousness of the significance of their burden as we are in the habit of attributing to bees.

Women Influence Public Opinion

Public opinion is like a sponge soaking up its surrounding medium. If the men of the public utilities would consider the capacity of women to carry their ideas into the world, they would in many cases see fit to make use of this method of influencing public opinion which is already in their hands. It offers wide scope and endless opportunity, for, as every one knows, a little stone cast into a pond, however unpromising its aspect, causes a series of ripples which are bounded only by the surrounding shore; one woman may start a ripple of thought in her own little group which will communicate itself to as many groups as touch upon hers.

The question naturally arises, are the women of the United States, and more particularly of the Pacific Coast, in favor of governmental ownership with political operation of public utilities? Intricately bound up with that question is the relationship between government ownership of public utilities and government ownership of all the

INDUSTRY has been prone to overlook the importance of women as a factor in combatting the socialistic propaganda which threatens the light and power utilities. Yet a woman's vote counts as much as a man's. Again, women can act as carriers of current thought, disseminating information among their friends. In this article the wife of the vice-president and general manager of the Pacific Power & Light Company brings out some facts that the electrical industry may well consider.

means of production, in other words, socialism. From common report the electrical industry is well grounded in its belief that government ownership and political operation of public utilities is but the first step in the accomplishment of a socialized state.

Are women in favor of socialism? When its inevitable consequences are explained to them by someone in whom they have confidence the answer generally is "no." Ordinarily there is too great a gap in

the average woman's mind between the theory and practice of socialism. For instance, not long ago the writer heard a wealthy woman say, in reply to the question as to whether or not she believed in socialism, "Certainly, every thinking person does today." One doubts whether the speaker had ever pictured to herself the difficulty of buying a roast of beef from a government butcher whose shop was filled with political appointees inoculated with the spirit of indifference that characterizes that class of persons. If that woman's husband had heard her remarks and confronted her with the change in living conditions which a socialized state would force upon her, she would have had a rude awakening.

Interest in Cooperative Work Is Keen

There is, however, more than lack of information as to the future results of the public ownership policy. There is also the present day woman's interest in cooperative effort to be taken into account. Women have found out the advantages of combined effort. Read any good, woman's magazine and notice the amount of space devoted to cooperation in the home and in the women's business field.

To many women political ownership is merely a step forward in the movement to modify the wear and tear of modern life on the individual by letting the distributed weight of her economic problems rest upon the shoulders of many.

If the public utilities deem the favorable attitude of women toward private ownership to be of importance, then it is time that the utilities give thought to the spread of information about their business among the women, particularly among the women whose husbands are deriving their daily support from the industry, and also among the women who are actually employed by the utilities themselves.

Local improvement clubs, women's clubs, parent-teacher associations and similar organizations are daily teaching women what cooperative effort can gain for the benefit of the community. Let the utilities teach them what public ownership and political operation will mean. The writer feels that this offers one of the most suitable channels through which to point out the benefits of private operation, coupled with the industry and attention that are the natural consequence of the desire of the individual to succeed in his business.

Again, women are interested, as has already been stated, in cooperative effort. Make more publicity out of the admirable cooperative activities of the electric light and power industry. Not only do the management and employees of most companies feel a common interest in and loyalty to the source of their income but they also feel personally interested in the industry as a whole and in the companies with which their own company is physically connected.

Let Women Know the Facts

Here again there is need of more and wider information. When women understand that the so-called "power trust" is merely an interconnection of adjoining companies made to insure greater continuity and better service to their homes, they will communicate that information to socialistic husbands, if any. It should be made clear that the so-called "superpower" is not a government creation but is already a lusty infant born of private ownership and watched over by the safeguards of regulation.

The very phrase "private management" is misleading, for under the present policy of customer-ownership, the private corporations affected by the agitation for public ownership, are actually in many cases already largely owned by individuals comprising a very appreciable part of the public. Some Pacific Coast companies have thousands of stockholders and in many instances from 80 per cent to 100 per cent of the employees of the utilities own stock in the company and have their influence in its policies. Show women these facts, explain the significance of agitation against private ownership, teach them something of the business problems of industrial life.

Talk the Problem Over

There is a very simple way to teach women—talk to them. Men in responsible positions are occasionally loath to satisfy the mental hunger of those with whom they associate, and less trained minds become the field for agitators and theorists whose ideas fall upon fertile soil ready for planting, instead of upon the close-matted turf of proved and ascertained practices.

The electrical industry at least has nothing to lose by an expose of its workings. Let every man connected with it go home and talk over with his wife the problems connected with the industry and explain to her the advantages of his job in comparison to that of the mail clerk, for instance.

Compare Political and Private Operation

The post office is the branch of the federal government with which most people come in contact. Is the indifference and lack of ambition of the clerk at the stamp window to be favorably compared with the courtesy and intelligence of an appliance salesman? If it is, there is something the matter with the salesman. If it were as difficult to get in touch with the electrical trouble man as it is to secure possession of a parcel post package upon which there is a small duty to be paid, our houses would be dark and our streets likewise.

We are told that utility rates are complicated. They are as plain as A, B, C compared to an income tax statement.

We frequently hear of alleged difficulties in making service applications. Surely a comparison with the bother and fuss necessary in purchasing twenty-five cents' worth of revenue stamps from the Bureau of Internal Revenue should put to shame the person who criticises the utility on this point.

If a satisfactory settlement of the monthly account with the local utility took as long as does the adjustment of a disputed income tax, there would be few families who would not rather revert to coal oil. Try getting satisfaction from the post office for a missent package—and compare it with the action taken on a complaint by any public utility.

Does a woman think of this when she switches off the lights to go to bed? And does she offer up a silent prayer of thanks that she has **not** to endure political operation? Ten to one she does not. Make it ten to one she does and the fight for private ownership is half won.

The Man's Part

To fire the minds of women of industry, already alive to some of their capabilities, with true and useful information, thus making them aware of a new capacity to function in the economic life, is the duty and privilege of the men in the public utility industry.

Woman's seeming indifference to the remarkable achievements of private industries, her apparent tendency to follow blindly after the wildest theorists, have been due quite as much to masculine reserve as to inherent blindness or absorption in her own affairs. Point out her interest in what she has been used to regard as a domain of life outside her range of influence and she will be found wanting neither in intelligence nor activity. Show her the proven value of private enterprise and private service, show her that her little home economies are already helping to support the mighty army of more than nine million souls now on the governmental payroll and she will think twice before wishing to increase that number. Show her that private industry is like a well-run boarding house managed by an interested housekeeper, bound to be satisfactory to owner and to occupant through the saving touch of personal incentive and personal initiative. The writer feels sure that not many women will care to feed more people from the public kettle.

Tendencies and Dangers in Taxation

By Wigginton E. Creed

President, Pacific Gas and Electric Company, San Francisco, Calif.

THE biggest issue in the country is the issue of taxes. Everybody pays taxes. No one, rich or poor, escapes. Many of us pay them directly to the tax-collector on the properties we own and by way of deduction from our incomes. All of us pay them indirectly as an addition to the price of the things we buy and the services we employ.

One does not need to own property to pay taxes. All one needs to do is to live, and even when we die, there are death taxes. But living, all of us pay taxes either on our homes or in our rent; in our grocery and butcher bills or in our board bills; in the cost of our clothes and shoes; in our light and fuel bills; in our railroad fares and in the price of every commodity or service purchased.

In the Ptolemaic period of Egyptian history, scholars have discovered that no less than two hundred and eighteen separate and distinct taxes were paid by the unfortunate Egyptians including a hippotamus tax to meet the expenses of driving off the river horses, whereby one may conclude the people paid for the official big game hunts of that remote day about as we do for the junketing trips of this modern age. But distinguished as were the Ptolemies for inventing taxes, we need not blush for mortification lest we were outdone by them. The Ptolemaic taxes were obvious whereas ours, for the most part, are invisible and are collected from us by unseen hands in microscopic amounts minute by minute, hour by hour, and day by day. Every merchant, every doctor, every company and every person from whom we buy goods or service stands guard, by government compulsion, to take toll of the whole one hundred and ten million of us to meet the costs of government. For several years, we have been conscious of the over-all, crushing burden, but we are just beginning to understand the process and just awakening to the need for calling a halt.

No one need question the statement that "the high cost of living is the high cost of taxation."



WIGGINTON E. CREED

believes that federal, state or municipal ownership of any industry means a decrease in taxable property and a consequent spreading of taxes for which the people will be forced to pay. Government extravagance will never be checked, he declares, by a program which calls for further participation by government in industry and business.

It is absolutely and undeniably true.

Whether we can lighten the burden of taxation, whether we are spending more money on government than we need to spend or can afford to spend, whether our policies of taxation are wise or unwise, whether we are needlessly increasing taxes by the reckless issue of tax-free bonds and a hundred other questions of like import are, therefore, questions of universal concern.

In this state of affairs and impelled by the dire necessity for amelioration of our condition, Secretary Mellon came forward with a sound and honest proposal for the revision of federal taxes to effect a net reduction in the aggregate of about \$323,000,000. His plans were immediately subjected to the attacks of one bloc or group after another. There were those who saw in the situation

an opportunity to advance their theory of the redistribution of wealth; there were those whose economic delusions led them to seek to promote the interests of some particular class at the expense of others. What was lacking was unanimity in the point of view that the problem was a tax problem, and that no completely just or sound solution could be worked out unless the problem was approached solely as a tax problem. The result was a compromise. It yields the country less relief than it could have had, and less than it ought to have had.

But important as are federal taxes, they are not one-half as important to us as tax reduction within the State of California itself. The aggregate of the taxes paid by the people of California in the fiscal year 1921-22 was approximately \$384,134,839. Of this amount the federal government exacted \$131,652,856, leaving for the state and our cities and counties \$252,481,983, or nearly twice as much as went into the national treasury. In 1922-23 the total was approximately \$392,651,600 of which the federal government took about 30 per cent. In other words the total of state, county and city taxes in California has become more than double the total of the

federal taxes levied and collected within the state. During the past ten years taxes in California have increased five times faster than wealth or income, and six times faster than population.

Such a rapid increase in the tax burden deserves careful study, but in itself it does not tell the whole story. The enormous sums collected from taxes were wholly insufficient to pay the cost of our enlarged program of governmental activities in California, and future revenues and generations have been obligated to pay vast sums of money borrowed for expenditures which current revenues were inadequate to meet. During the fiscal year 1921-22 the California state, county, and municipal governments borrowed \$116,065,863, paid off \$23,278,850 of previously issued bonds, leaving a net increase in bonded debt of \$92,787,013. The actual expenditures in excess of receipts from all sources other than the sale of bonds were \$69,639,119.

During the fiscal year 1922-23, the same governmental agencies borrowed \$59,629,518, paid off \$22,051,857 of previous debts, leaving a net increase of \$37,577,661 in outstanding bonded debt. The expenditures in excess of receipts from all sources other than the sale of bonds were \$68,176,144, part of which had been borrowed during the previous year.

Thus in these two fiscal years the total expenditures in excess of receipts from ordinary sources of taxation were \$137,815,263 or more than 20 per cent of the total revenues from normal taxation, and nearly 17 per cent of the total expenditures. Borrowed money supplied the excess. To the taxpayers, these borrowings mean an added burden of about \$5,500,000 per annum for interest and redemption.

What Government Costs in California

The total government expenditures in California of \$430,896,854 in 1922-23 exceeded the total appropriations of Congress for any year of American history prior to 1898 except during the Civil War period; the public debt of California today exceeds that owed by the United States at any period of its history from the beginning to 1861, when the population of the country was more than thirty millions; the aggregate borrowings of our state and local agencies of government in California during the one fiscal year of 1921-22 represents a sum in excess of thirty dollars per capita, and exceeds the total bonded indebtedness of the United States government in 1860 or at any previous date in its history.

When a community borrows money to pay for improvements it merely passes the burden of taxation on to the future. This is both necessary and desirable in many instances, but it is becoming apparent that the recent rapid increase of public debt in California has placed a burden upon the present and future taxpayer that will severely limit the use of public credit in the solution of the problems of expansion during coming years.

Spending More Than We Collect

The dangerous fact is that our state, county and local governments are spending from 20 to 30 per cent more money than is being collected in the form of taxes, burdensome as these are. At this rate the

reservoirs of public credit will be entirely exhausted within a few years, and the revenues available from future taxation so mortgaged to pay for our present borrowings that a drastic curtailment of government activities will be imperative. Business prudence would naturally suggest that voluntary retrenchment in expenditures that can be avoided is preferable to a condition that would leave us no choice. The next generation may urgently need some of the credit we are so lavishly dissipating,—may have an almost imperative use for some of the money required to pay interest and amortization charges on bonds we are so freely issuing today.

The problem is still further complicated by the fact that the hundreds of millions of dollars borrowed in California and still unpaid are not only withdrawn from commerce and industry but are also withdrawn from the basis of taxation, as both the bonds and the income they produce and the property the bond money is used to buy or build is no longer taxable.

In analyzing the situation, one may profitably consider the fact that in 1914 the amount of state, county and city tax-exempt bonds in the whole country was a little less than three billion dollars; at the end of 1923, the aggregate of these bonds had more than trebled, amounting as of Jan. 1, 1924, to about eleven billion dollars. The startling point is that they increased at the rate of a little over one billion dollars per year during the last three years.

We Are Swept Along With the Current

California has been in the center of the current, and has been swept along with the rest of the country. Our total bonded debt as of the same date is in excess of half a billion dollars. This represents an increase of 305 per cent in less than ten years, and it is important to note that the public debt of the country as a whole has increased fourteen times faster than the growth of taxable wealth in the nation. Excluding the national war debt, which is abnormal, the expansion of public debt in the nation as a whole has nevertheless exceeded the expansion of taxable property at a ratio of two to one, but California has increased four times faster than the growth of the state's taxable wealth.

Many of these bonds in California have been issued to extend governmental functions and to satisfy the whims and desires of an extravagant age. Some of them have been issued to satisfy the demands of public ownership advocates. This mortgaging of present credit for a holiday of today at the jeopardy of the sober needs of tomorrow must be checked unless we are willing to incur the perils and penalties of bankruptcy.

If anyone regard this statement as extreme, let me justify it by these fundamental propositions: (1) we have increased our public debts at a much faster rate than the growth of our taxable wealth; (2) the expansion of government functions and the piling up of bond issues to finance them without a corresponding increase in taxable wealth means more taxes; (3) in view of the crushing weight of present direct and indirect taxes, the tax paying capacity of

the American people, with present tendencies of extravagance and expansion of government unchecked, will not be large enough to meet the necessary new tax levies and the inevitable additions to old tax levies and the inevitable additions to old ones.

Plainly put, the answer to the problem is simply a mathematical answer to be obtained by adding up the tax paying resources of the people in one column and the demands of the tax gatherer in another column. To date, the tax gatherer is far in the lead and is going at the faster rate.

Contemplating the situation, we find demands for government ownership which embrace all the utilities, all the railroads and all the coal mines in the country. If they are satisfied, all these properties will be nationalized and owned and operated by government. At once we know that granting these demands means that from twenty to thirty billion dollars more of tax-free bonds must be issued, that the income on twenty to thirty billion dollars more capital will escape taxation, and that twenty to thirty billion dollars more of tax-free industrial property will be substituted to do the work now being done by tax-paying property. To the thoughtful American mind the idea is shocking, and spells ruin. But let us see, if we shrink from the allopathic dose offered us by dreamers, sentimentalists, and demagogues, whether there is not equal reason for refusing the same dose in homeopathic form for a single community, a single county or a single state.

A Two-Edged Sword

Bonds issued to indulge in the experiment of government ownership are tax-exempt bonds just as are all other state, county and city bonds. When a city, for example, votes a thousand-dollar bond to go into the power business, the street railway business, or any other business, it offers this bond for sale. Some one with a thousand dollars buys that bond, and thereafter the thousand dollars paid for the bond and the income on the thousand dollars represented by the interest collected on the bond escapes taxation. But this is only one side of the picture. The city forthwith takes the thousand dollars and either buys properties already constructed which are tax paying, or purchases bricks, cement and other materials and constructs new properties to carry out the municipal business enterprise. These physical properties in public ownership are also tax-exempt.

The industries that have manufactured the cement, the bricks, and the other materials have added materially to the taxable wealth of the state because they have increased the low value of raw materials to the high value of manufactured products in usable condition. The direct result of the government ownership operation is to withdraw this increase in taxable wealth from the tax roll, to undercut the normal growth of taxable wealth, and to increase taxes upon the remaining taxable property by decreasing the amount available to meet the burden. It means just this: that for every thousand-dollar bond voted by a city or other political subdivision to engage in business, there are two thousand dollars off the tax rolls,—two thousand dollars less taxable property to bear the burden of taxes. In

other words, the process is a process of substituting tax-free capital at a ratio of two to one for tax-paying capital, and thereby retarding the normal increases to taxable wealth and destroying the safe balance which should exist between taxes and taxable wealth.

Why Cities Go Broke

So far has this process gone that we have cities right here in California that have used their credit to such an extent in unnecessary directions that they dare not issue at this time bonds to build sewers or to provide in other ways to protect the health and safety of the people. If the process continues we shall have more cities in this condition, more counties in this condition, and the State of California itself in the same condition.

The proposal to remove the tax exemption feature of the state, county and city bonds by Congressional action, or otherwise, does not solve the problem. Such action would result only in placing an income tax upon the thousand dollars that goes into the thousand-dollar bond. It would not retard the substitution of tax-free property for tax-paying property, or impose a tax upon the physical properties purchased or built with bond money.

Summarizing this problem of taxation we find that it involves:

- (1) A heavy increase in the amount and a wide extension in the scope of taxation which, while increasing much faster than the increase in taxable wealth, still produces less than the public expenditures;
- (2) A program of borrowing to supply the deficit by which future increases in taxation are assured and an increasing proportion of community wealth and income is exempted from the payment of taxes;
- (3) Unmistakable evidence that each of these tendencies has been progressing at an accelerated rate.

The Remedy

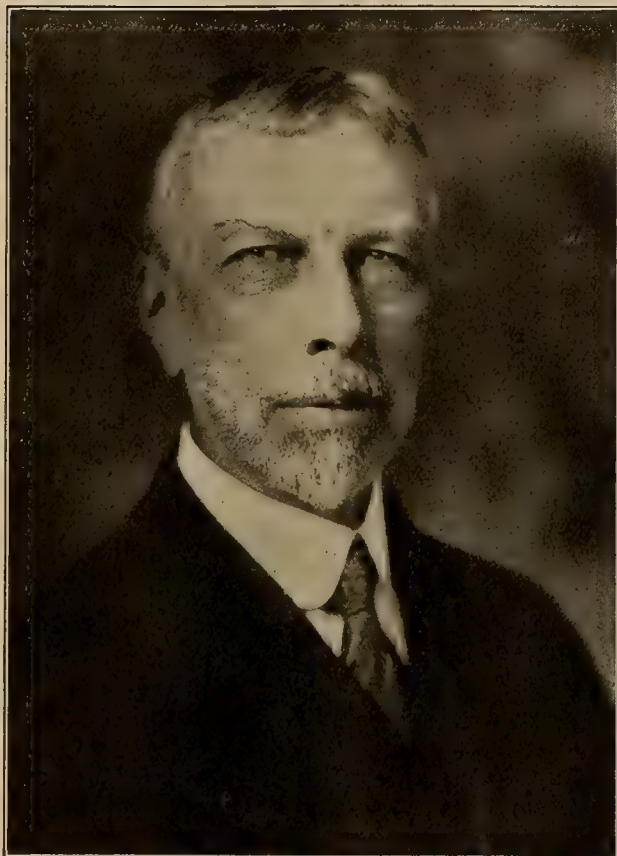
The remedy lies in the hands of the citizen. We are in our present position because the average citizen has been ignorant of the situation and has been indifferent to his obligations as a citizen. To get effective results and restore our economic structure to a sound basis, every citizen of intelligence must study and analyze the tax problem, not only as to federal taxation but in his state, in his county and in his city. With information and understanding of the situation, he cannot be misled by thoughtless promises and hopeless predictions. But, having acquired understanding, the intelligent citizen must do more,—he must register and he must vote, and he must make up his mind that he will not vote bonds for unnecessary purposes or vote for men in office who lack the ordinary common business judgment necessary to an understanding of the tax problem. After all, the demagogue is not afraid of criticism as long as he can make smooth promises to those who do not understand; but he is tremendously afraid of the citizen who knows and votes accordingly. We need more citizens who know. Faithful public servants in office need the support of more citizens who know.

State versus Private Management of Power Plants

By Dr. Arthur Twining Hadley*
President Emeritus, Yale University

UNTIL recent years, there was little call for state ownership of power plants as a measure of national policy. Even when distributing agencies, like street railways or electric lighting plants, were managed by municipalities, they frequently preferred to buy their power from some private company instead of producing it themselves. But in the present century, two causes have combined to foster a sentiment in favor of making electric power production a government enterprise.

In the first place, the increased use of water as a source of power, in itself fostered such a demand. Private companies which used water appeared to many people to be getting their power at public expense, because the government had given them control of a natural monopoly. The general public did not understand how much capital and intelligence were needed to make water power available for use. And in the second place, it has gradually become evident that the different power plants of the country could no longer be regarded as wholly separate operating units. They must work together as an organized nation-wide system, if they are to deliver and sell their product to the best advantage. Any government is always inclined to be jealous of a nation-wide organization which it does not itself make and control. And this jealousy has been heightened by the name chosen for the new movement. The word "superpower" is not calculated to allay outside prejudice; nor was the proposed substitute, "giant power" very much better. Either term suggests an intent to dominate the industry of the country, rather than to promote mutual helpfulness.



DR. ARTHUR T. HADLEY

after a dispassionate review of the subject from the standpoint of a student of political economy, is of the opinion that "as the electrical industries constitute a field where there is exceptional room for progress in the immediate future, both on the operating and on the commercial side, it seems most undesirable that electric power generation should become a government monopoly at the present juncture."

Under such circumstances the question of public versus private management tends to become one of sentiment rather than of business. Even if you can show a large number of instances where state management costs more than private management, or has involved higher rates, or has been given up by communities which have tried it, you do not make much impression on the advocates of government ownership. "The new democracy is passionately benevolent and passionately fond of power." Many voters are prepared to pay whatever price may be necessary to protect them against the dangers which they apprehend from predatory wealth. Every new form of industrial combination is likely to be made an occasion for extending state ownership unless overwhelmingly strong general reasons can be urged against such a policy from the public standpoint.

To judge of the probable effect of state ownership of power plants, we

have two methods at our command. First, we can examine the effect of state management in the past in lines of industry most nearly similar to the electrical industry of today, and see what lessons can be drawn from that experience; second, we can analyze the proposals of those who now advocate state ownership of power plants, and see whether they are economically sound; whether their application is likely to conserve or to injure the public interests.

Industries are of two kinds: the standardized and the progressive. In the standardized type, of which the post office, the telegraph or the municipal water supply are examples, a large part of the work is a matter of routine. Honest administration and faithful performance of service are the all-important conditions. The capital invested is either small in

*From a paper before the World Power Conference, London, England, June 30-July 12, 1924.

proportion to the year's business, as in the post office, or subject to easily calculated depreciation charges as in the water supply. The necessity rarely arises for making radical changes of method to keep abreast of the times or scrapping plant before it is worn out because new inventions have rendered it obsolete. The year's budget can therefore reflect the year's operations quite accurately and show whether there is a real profit or a loss concealed under the appearance of a profit.

In the progressive industries all these conditions are reversed. The success of the work depends upon something more than the performance of routine duties. The amount of capital involved is large. Depreciation cannot be accurately calculated. New inventions and new methods often render the plant obsolete before it is worn out. The year's budget does not and cannot accurately reflect the year's conditions. A delay in scrapping a group of machines which modern improvements have put out of date may convert a real loss into an apparent profit. A successful experiment which is going to be highly profitable in the long run, may create a present loss, which will only be repaid by profits in the budgets of future years.

The history of state-owned industries in the nineteenth century shows that government does relatively well with standardized industries like the post office, and relatively ill with progressive ones like the railroad. The difference is particularly marked where the administration is under the control of a legislative assembly. The primary object of a legislative assembly is to promote certain policies which its members and the people who have elected them regard as important. To do this they must keep their own party in power. They look with disfavor on experiments which, if unsuccessful, will be made a campaign issue against them, and if successful, may simply redound to the credit of the other party after it has got into power. They are reluctant to substitute new methods for old ones when the success of the new method involves writing off from the capital account an asset which was handed down to them by their predecessors, and spending current funds on something from which their successors will reap the advantage.

The Case of the Railroads

Among the large industries of the present day the one which is least standardized and most progressive in its character is the electric power industry. Among those of the nineteenth century the one which was least standardized and most progressive was the railroad industry. Amid all their external differences, the things which affect the relations of these two industries to the government are singularly alike. The history of state railroad management in the last century should therefore indicate with a good deal of accuracy what results we may expect to reach, and what dangers we have to fear if electric power development should be placed in government hands.

In the first place, state railroads have habitually proved unprofitable. Though every great country

with the exception of Great Britain has made experiments in state railroad operation, only two, Prussia and the South African Dominion, have succeeded in earning the full amount of interest on the capital invested. Some others, like Sweden or New South Wales, have pretty nearly succeeded in doing it; but, in general, state railroads have constituted a large and increasing burden on the taxpayers. The hopes of lightening the burden for future generations by sinking funds, which were frequently cherished at the outset, have not been realized.

In the second place, no operating improvement of importance has ever had its origin on a government railroad system. Telegraphic train orders, interlocking switches and signals, air brakes, automatic couplers, all had their origin on the private railroads of England or America. Government railroads gradually introduced them after they had been tried out on private lines, but they did not originate them. Improvements in equipment and traction by which traffic could be carried at low unit cost, have almost always been due to private initiative. Prussia and New South Wales have been content to handle their business in the old-fashioned way even when the new one was less expensive and more useful to the public. This absence of initiative in method is peculiarly striking in the case of Prussia because it was manifested at a time when every form of private business in that country was getting ahead of the rest of the world instead of falling behind it. When the Prussian chemical factories or Prussian steel mills had the best appliances in the world the Prussian railroads still used pigmy four-wheeled freight cars and were content to handle correspondingly small train loads.

In the third place, the state roads were equally backward in commercial improvement. The thing that made it practicable to reduce railroad rates so rapidly during the latter half of the nineteenth century was the development of a system of tariffs which made a large traffic in cheap goods possible, which encouraged long distance shipments, and which utilized the invested capital to the fullest extent. The advantages of this system for the public as well as the railroads were fully recognized by German political economists; but the Prussian government, and other governments, were slow in accepting it, preferring to adhere to the equal mileage principle at the sacrifice of traffic and traffic economy.

Political Corruption

Forty-five years ago an Italian commission made an able and dispassionate investigation of the whole subject of European railroad management. Though appointed under a radical ministry which was favorable to state ownership and operation, the commission reported that this system had not proved satisfactory; that state management was more costly than private management; and that the state was much more apt to tax industry than to foster it. The Italian commission was also gravely impressed by the political dangers attendant upon state railroad ownership. In a business so complex as railroad operation the opportunity for political influence

was far greater than in the post office or in the telegraph and such influence was almost always mischievous in its effects. "Politics tended to corrupt railroads and the railroads tended to corrupt politics."

In the years which have elapsed since the report of the Italian commission there has been no other investigation of comparative railroad administration which was so comprehensive and so careful. But publications like those of Acworth or Yves Guyot just before the war and experiences like those of Italy or of the United States in the years just after it, indicate that what the commission found true in 1881 still holds true today.*

Such have been the results of ninety years of state management in the industry which, in its progressive character and its problems of making rates to develop the kind of traffic which will utilize the plant economically, most nearly resembles the electric power industry of today. How do the advocates of state ownership of power plants try to rebut the presumption created by these facts?

Arguments for State Power Plants

In the first place, they admit the bad effect of national politics upon business management wherever it is allowed to enter, but they think that they can keep it out of the electrical industry to a greater degree than has been possible in the railroad industry. They propose to make the work of selling electricity to the public in various parts of the country a matter of municipal administration and to treat the system of power plants as a cooperative undertaking for the municipalities under a permanent chief, independent of political control by the legislative body.

All these points are good as far as they go. Municipalities are likely to manage industry better than the national government for two reasons. The municipality is organized to do business as its primary object, not to legislate; and it can be more closely watched by the people with whom and for whom it does business. A state power plant has an important advantage over a state railroad, in the fact that the actual selling to the consumer is done by separate local agencies and not by a national agency. The idea that the manager of the power plant should be regarded as the agent or trustee of a group of municipalities which want cheap power, and not as a creature of the legislature, is also thoroughly sound. The one question, and to those of us who have come in contact with legislative assemblies in recent years it is a serious question, is this: How many men are strong enough to assert their independence when there is a fundamental difference of opinion between them and the legislative assembly as to what ought to be done? The nineteenth century has given us instances of a few such men, but there have not been

anywhere near so many as we needed. Is the twentieth century better off in this respect?

I am content to leave this as a query, and pass on to a more important part of our subject. Assuming the administration to be thus organized and the manager to have this power and this permanence, what policy do they propose to pursue? What advantage will their system offer the community if successful?

Answering the Low Rate Theory

The answer generally is that they propose to give lower rates to the consumer either now or in the future than private companies can afford to give. They claim that they are able to do this by their exemption from taxation and by the fact that they are not trying to make a profit as private companies do, but are content to pay interest and perhaps contribute to a sinking fund. Now I shall try to show that looking at the question as a matter of economic theory, both these methods of lowering costs are wrong in principle—harmful rather than helpful to the community and particularly harmful under conditions as they exist at present.

The proposal to exempt a large group of industrial investments from taxation is always open to grave criticism. The cost of electric light or electric power is not done away with by such exemptions. It is merely shifted to other shoulders than those of the producer of electricity. The taxes for the support of the government in general have to be paid by somebody. After making all due allowance for the things which a state-owned power plant might do to reduce the budget of municipalities which it serves, the fact remains that the exemption of all new capital engaged in electric production from its share of the burden of taxation must mean heavier burdens on everybody else—higher rates of taxation for the land owner, higher rates of interest for the borrower, and too often higher surtax rates for the man of initiative and energy. In his recent book on taxation the United States Secretary of the Treasury has shown how dangerous is this added burden under present conditions and how severe is the resulting loss to the country.

This kind of exemption also has a bad effect on the morale and efficiency of a government industry. If the manager of a private company has to pay interest and taxes in order to show a balance on the right side and the managers of a government property can do so by paying interest alone, the latter tends to overestimate the excellence of the work he is doing and to content himself with a lower standard of efficiency and economy.

Taxes and Sinking Funds

It is sometimes said that the exemption of a public enterprise from taxation is offset by the requirements of contributions to a sinking fund to which it is subjected. I doubt whether this is generally a sufficient offset to post-war taxes.

But even if it were sufficient in amount, there are good reasons from the accounting standpoint against treating a sinking fund contribution as an offset to a tax exemption. A tax is a current expense; it represents a contribution made by the electrical

*I have made no mention of the fact which to superficial observers seems most significant of all—that freight rates per ton-mile, the world over, average a good deal lower on private lines than on government lines—because a direct comparison of average charge per ton-mile on two different railroad systems proves about as little as a similar comparison of average charges per kilowatt-hour on two different electric systems. You have to know a good deal about the special conditions in either case before you can draw any conclusions.

industry, in common with other industries, to the general expenses of the government for the year. A sinking fund is not, except constructively, a current expense. It is an investment of capital which you guess will prove a good one fifteen or twenty years hence. And my objection to treating it as an offset to taxation is that the government nearly always guesses wrong. In the long history of government railroad operation there is scarcely an instance where a sinking fund really produced the effects intended; where the public really got a valuable property free, or substantially free of debt. The maintenance of a government sinking fund has usually been accompanied by an inadequate depreciation charge; or perhaps it is better to say by a reserve account which covers depreciation only and makes little or no allowance for that much more fruitful source of loss, obsolescence. A government makes proper allowance for the rate at which capital wears out; it seldom makes proper allowance for the probability of its being superseded by new inventions.

A Word About Profits

The second method by which it is proposed to reduce costs of government enterprise is by foregoing profits.

In the light of the history of railroads in the previous century, it would perhaps be sufficient to say that this offers no prospects at all. If government enterprises have been barely able to pay current expenses, how can they make rates lower by renouncing a profit which they never had? But the objections to this idea can be put on broader grounds. Let us assume that twentieth century governments know more about managing industry than nineteenth century governments; that they could make a profit if they tried, but that they deliberately decide to operate at cost. I hold that in the case of a progressive industry as distinct from a standardized one, this attempt is unsound in principle and will hurt the public instead of helping it.

In an industry where rates are kept at a reasonable figure, either by competition or by the action of public commissions, profits are made in two ways—by developing new business which allows the plant to be better utilized, or by introducing new machines or methods which cheapen the direct cost per unit of traffic. In neither case is there any loss to the public. In the first there is an immediate public gain in the form of larger service—in the second there is a possibility of public gain which becomes an actuality as soon as the use of the new method becomes general. For the experience of every industry with large fixed capital shows that a reduction of unit cost makes a reduction of rates not only possible but profitable. This is the way progress is made. This is the way in which new ideas are introduced and developed which mean big gains for the public. If we can get a real improvement of machinery or of method the price paid in the form of profit is always small in comparison with the general gain to the community.

In his remarkable work on "The State in Its Relation to Trade" Lord Farrer, for many years

Permanent Secretary of the British Board of Trade, has shown the folly of attempting to reduce rates by limiting profits. The laws controlling the gas companies of England which were based on this idea had the opposite effect to that which was intended. They prevented reduction because they took away the motive for reduction. If dividends were limited to a fixed amount, there was no longer any stimulus for introducing new methods which would lower costs and increase sales.

Now this disability which was imposed upon the gas works of England in the nineteenth century, and which people are trying to impose upon the railroads of America in the twentieth (to the great public detriment in either case) represents a chronic condition in government-owned industries which claim to operate at cost. Those in charge are given neither the motive nor the means to handle progressive industry by the most progressive methods on either the operating or the commercial side.

Private Ownership Encourages Experiment

The question whether a new method will work commercially is always a doubtful one. There are more failures than successes. The immediate financial effect of trying a number of experiments simultaneously will appear to the auditors of the year's accounts to be bad. Not until you know which of them is going to work will you be able to show good results; often not until several years later. The more revolutionary the success of the experiment in reducing cost to the public, the more old plant you have to scrap because you cannot use it under new rates and new conditions.

If the producing plants are owned by private capital, individuals or groups of individuals have the chance to try these experiments at their own risk. The gambling instinct is sufficiently strong in human nature that each man is ready to back his own guess as to what he can do with all the money that he himself can afford, or get his friends to supply him with. Most of this is lost. The profit on the invention that succeeds or on the method that proves useful seldom equals the aggregate loss on the inventions or methods which look good in theory but prove bad in practice, but the companies gain and the communities gain largely in the long run from finding out which invention is successful and utilizing it.

It is very difficult, if not actually impossible, for a state-managed industry to be free to try this sort of experiment. It is not because the chief insists on pecuniary rewards for himself. If he is a man of the right sort, the ambition to do public service will be even stronger than the ambition to make money. But he cannot try all the experiments at once on the public account; and in the light of the way governments have treated inventors, he finds it very hard to get other people to try the experiments at their own risk. He has to confine himself to a very few experiments under the advice of an expert; and in railroad history at least, it has not generally been the scientific experts, either in physics or political economy, who have first shown the way to the big

results. Private ownership encourages experiment; state ownership encourages stabilization.

Such are the economic reasons which underlie and explain the fact that government management has been fairly successful in standardized industries, and habitually unsuccessful in progressive ones. As the electrical industries constitute a field where there is exceptional room for progress in the immediate future, both on the operating and on the commercial side, it seems most undesirable that electric power generation should become a government monopoly at the present juncture. If a particular group of municipalities believes that it can get its light and power cheaper by organizing a cooperative agency, let it do so; or if the government thinks that it can develop some of the nation's water power to better advantage than private companies, let it do so. But

let it go into the competition on equal terms with private companies as to taxation and regulation. In this way, and in this way only, can it prove whether it is really cheaper and better for the community. The history of state management of progressive industries in the last hundred years creates a strong presumption against the encouragement of government-owned electric plants by special privileges. Our brief experience with the electrical industry itself has, in the opinion of the National Association of Railroad and Utilities Commissioners of the United States, tended strongly to confirm that presumption. Under conditions like this the policy of exempting government-owned plants from taxation is an unwise one to continue, and the proposal to create a government monopoly is wholly unwarranted by past experience.

The Case of the People of California vs. The Water and Power Act

IN the midst of a busy day in court Justice ordered the Clerk to call the case of the People of California against the Water and Power Act.

"This particular case," observed Justice, "was decided two years ago after an exhaustive hearing, and now comes up again on the plea of the defendant that the adverse decision was based on a misconception of the facts, not by the Court but by the People. Under the circumstances we can best get at the merits of the proceeding at bar by first questioning the plaintiff as to his understanding and thereby determining his ability to form a sound judgment."

The People having been duly sworn, Justice asked: "Is this the same Water and Power Act that presented itself to you at the former hearing?"

"It is, from the first misstatement to the last welcome period."

"No heat," remarked Justice, chidingly.

"I can't help it," said the People. "There isn't even a pretense of a change, but I'm told that I don't know my own mind. Further than that, the defendant doesn't even discuss the act in making his appeal, but waxes hot and makes faces and calls names and roars about things that have nothing to do with the merits of the question."

"Perhaps, you had better make your point specific," suggested Justice.

"Well," said the People, "after the component parts of the great house I represent had rejected this act by a majority of 354,000, a verdict so tremendous as to leave no doubt of a fixed opinion that the measure was a public menace, it is contended

WITH Justice on the bench the imaginary case of the People of California versus the Water and Power Act is to be tried in the court of public opinion for the second time in two years. A seventh son of a seventh son has prepared a report of the court proceedings which we publish herewith. For those who are uninformed the arguments which the People offer before Justice should at least prove interesting.

that the verdict was due to lavish use of money, in short, that the great majority of me was bribed."

"Let us have some light on that," commanded Justice. "What is the truth about the expenditures of which complaint is made?"

"It is this. One of the greatest of California's industries was attacked by a little group of men that surrounded itself with highly-paid propagandists and sought to convince the

public that the power industry should be taken over by the state. Its mind was on power, but a good deal of the time it talked water, and always it poured out its money in a stream. Never before had any group set such a pace. The power companies saw their industry threatened, an industry in which not only the invested millions of many thousand men and women was involved but one on which the prosperity of the state depended. This little group of men had the advantage of attacking and had carried its assault to great lengths before the power companies began to combat its efforts. This opposition took the form of an educational campaign in which more than a million voters, scattered over a wide area, had to be appealed to by either speakers or literature. In the end truth triumphed over fanciful theory."

"Now," said Justice, "you may give us some facts about such expenditures."

"After the election in which the little group was soundly defeated there was brought about a one-sided legislative investigation, designed solely to cast discredit on the power companies and pave the way for the present proceeding. At that investigation

a sworn statement was presented by this group that its side had spent \$159,990.05. Of that amount it was admitted that \$106,825.11 had come from one individual. Then the investigating committee, by including the wages of power company employees who worked voluntarily against the act on election day, figured out that the several power companies had spent a total of \$501,605.58. No cognizance was taken of the fact that employees of the Los Angeles Municipal Power Bureau, an institution of which the little group thoroughly approves, campaign for bond issues a month at a time and that they, too, worked at the polls on that same election day. They were for the act, which made a deal of difference with the investigators."

"How did the expenditures of the individual you have just referred to compare with those of the power companies?" asked Justice.

"According to his own oath and his own figures as to opposition expenditures he himself spent more than any of the power companies except the two largest. He and his followers talk of a \$25,000 salary for a campaign manager, yet the field manager for the act missed that amount by only a few thousand. That person drew down \$22,450 for his services. Then there was a publicity man who was paid \$11,566.02. Another, being a little shopworn at the game of agitating the public, came cheaper, getting only \$6,247.23."

"What about money influencing the election?" asked Justice.

"That charge," answered the People, "is just a roaring of the winds, the source of power with which the other side is most familiar. Take a few of the remote counties of the state. No workers were hired in Del Norte County. Three advertisements against the act were printed in the Crescent City papers; one piece of literature was sent to the voters by mail. There was no organization against the act in any part of the county. There was no big power company in Del Norte. Conditions offered a perfect test of public opinion, and the votes went 116 for the act and 486 against, a ratio of more than 4 to 1. Then there was Alpine County, which has no newspapers. Literature was mailed to Alpine's few voters, and their verdict read 6 for the act and 42 against, a ratio of 7 to 1. One more instance. Modoc County has a scattered population and only three or four newspapers. A few advertisements, a piece of literature by mail, and the county voted 120 ayes and 1,390 noes, a ratio of more than 12 to 1. And yet the water and power advocates say that the people didn't really vote their own opinion."

"What is all this talk we now hear about need of water conservation?" inquired Justice.

"That's the approved way of avoiding the issue," replied the People. "It's just an attempt to take advantage of the dry year by misrepresenting conditions. They blame the power companies for not building more storage reservoirs, when every engineer knows that the storage reservoirs already built failed to fill. What the state needs most is not more reservoirs but more rain. Then we are told that state conservation of water will provide irrigation for mil-

lions of idle acres. We believe and know that what we lack now is not irrigated lands but settlers to go upon the lands that are already irrigated. We also believe that the wholesale withdrawal of water for appropriation, permitted by the act, would hamper big irrigation projects and break little ones. So there is nothing to the irrigation point. Just another case of wind, not water."

"We understand that state regulation of public utilities is attacked," remarked Justice.

"Not only attacked," replied the People, "but it is even broadly intimated that the Railroad Commission is subject to undue influence. Yet the records show that as a result of regulation there was only a comparatively small advance in light and power rates during the war-time soaring of prices and that today, as a direct benefit of regulation, electricity costs only 10 per cent more than in the days just before the war began, while living costs on the average are still 60 per cent higher."

"Have two years of reflection caused you to modify your opinion of the Water and Power Act?" queried Justice.

"Not in the least. It's the same old act that was beaten in every county in the state. All arguments made at that time still apply. A commission appointed by the governor, as the Railroad Commission is now appointed, but with far greater powers than exercised by that body, could bond the state for half a billion dollars, or \$140,000,000 more than the whole nation paid for the building of the Panama Canal. Yet when we speak of that tremendous and perilous bonding power we are calmly told that the commission will not spend the money."

"Do you recall any instance of a public commission failing to exercise such power to the full?" asked Justice dryly.

"Never," answered the People. "It is my sad experience that political commissions always spend all they are allowed to spend, and then come back for more. To say that the water and power board will authorize bonds only for projects that will pay is to attribute to its unknown membership a wisdom and foresight never even claimed by the seventh generation of seers and fortune-tellers. Members of all human organizations make mistakes, but while regulated utilities pay for their own mistakes, governmental agencies pass the cost of theirs on to the taxpayers."

"Any other objection?"

"Yes, that inconsistent provision for a special tax levy to pay costs and interest in case any of those sure-paying projects fail to justify promises. Apparently the confidence of the promoters of the act is not so strong as represented, and the only sure outcome is more taxes."

"What about promises of lower rates?"

"We are told that we shall get power at cost, which means nothing more than what it will cost us. And the water and power board would fix and change rates at its own pleasure, without regulation by the Railroad Commission and without review by any court. We would be at the mercy of five men with a great opportunity to build up a political machine

and unlimited patronage to keep the machine oiled at the public expense."

"Are any precedents cited in support of these promises of low rates?"

"None," answered the People emphatically. "Instead we are given carefully culled figures from various communities operating under different forms of public ownership, none of them really successful. They mention a discarded heating rate on which Tacoma lost \$10 on every consumer, and would have us believe that the rate is still the same and yielding a profit. They tell of wonderful profits in Los Angeles, although the people of that city have had to raise \$6,500,000 in taxes to pay interest and redemption charges on power bonds, and not a cent of the \$25,000,000 paid for the aqueduct that makes the production of power possible has been charged to the power bureau. Further, the bureau pays no taxes. Yet with all these advantages the rates are not as low on the average as those of private companies in the same general territory."

"There has been some mention of Ontario," observed Justice.

"Not so much as there was two years ago," replied the People. "Then we were informed that the Ontario Hydro-Electric Commission was the world's greatest worker of miracles. We looked into that, and found that private companies sold power at a cheaper rate not only in adjoining territory, but also when it was obtained from the same source and when it was sold in the commission's own territory. We found further that many Ontario towns paid far higher rates than those charged in California, and that agricultural sections were poorly supplied at rates so high that most farmers couldn't afford to pay for the service, even though one-half the cost of distribution lines was paid out of taxes. Nothing was said about the fact that Niagara Falls, from whence the commission gets most of its current, is one of the best and cheapest sources of power in the world, and that the chosen comparisons could not be justified save on the theory that Niagara Falls would be moved to California as soon as the Water and Power Act was approved."

"Is that the extent of your objections, or have you others equally cogent?" asked Justice.

"There are many others, not the least of which is that the chief promoters of the act favor the nationalization of basic industries as a general policy, and if given the chance would move on to a great socialistic scheme in which the workers would be ticketed and tagged and everybody would have to depend on the government for a living. The Water and Power Act would be the first step toward an industrial despotism."

"Enough," said Justice. "I regret that the limitation of my powers prevents the settling of this case right now, once and for all. You are to be commended for your previous judgment. More strength to your good right arm when you strike the next blow."

Here Justice turned to the appellant, and continued:

"As for you I shall express another and different wish. You have scoffed at the popular will which you profess to serve, and when again you go to the bar of public opinion may you receive your just deserts and be hanged by the neck until you are dead, dead, dead, and may there be no mercy for your soul."

Then the throng in the courtroom roared approval, and the Clerk called the next case.

Tabulated Vote on the Water and Power Act in 1922

A tabulation of the votes cast for Amendment No. 19, the California Water and Power Act, 1922 reveals some interesting facts. The measure required a two-thirds vote to become a part of the state constitution and failed by 353,849 of receiving a majority. In no county in the state did the measure carry. The fact that 159,920 of the 1,000,977 voters who went to the polls did not express an opinion on the act indicates the necessity for educating the public regarding the measure. The vote by counties follows:

County	Yes	No	Majority No	Precincts		Total Votes Cast
				Yes	No	
Alameda	26,332	60,903	34,571	13	819	99,765
Alpine	6	42	36	0	5	62
Amador	455	1,536	1,081	1	28	2,352
Butte	2,414	6,114	3,400	5	99	10,145
Calaveras	681	1,430	749	4	31	2,574
Colusa	550	2,196	1,646	0	28	2,381
Contra Costa	4,011	9,693	5,682	1	99	17,114
Del Norte	116	486	370	2	8	1,132
El Dorado	857	1,489	632	5	34	2,973
Fresno	8,669	21,108	12,439	10	154	33,485
Glenn	973	2,688	1,715	2	29	4,169
Humboldt	1,830	6,712	4,882	0	125	11,180
Imperial	1,729	3,351	1,622	6	48	7,449
Inyo	824	1,429	605	12	21	2,659
Kern	4,731	11,217	6,486	14	116	18,684
Kings	662	4,782	4,120	0	37	6,469
Lake	520	977	457	0	24	1,718
Lassen	435	1,428	993	5	27	2,380
Los Angeles	54,022	160,330	106,308	71	1,212	267,336
Madera	1,391	2,073	682	10	32	4,103
Marin	2,299	5,849	3,550	0	33	9,453
Mariposa	219	657	438	2	19	1,146
Mendocino	813	4,321	3,508	6	84	6,510
Merced	1,552	3,915	2,363	4	43	6,577
Modoc	120	1,390	1,270	0	27	1,971
Mono	83	180	97	3	5	366
Monterey	1,483	4,973	3,490	3	66	7,463
Napa	1,295	4,592	3,297	0	47	7,314
Nevada	961	2,158	1,197	4	37	3,773
Orange	2,902	14,798	11,896	1	123	21,040
Placer	2,140	2,997	857	15	47	5,985
Plumas	417	680	263	5	25	1,292
Riverside	2,960	9,363	6,403	3	102	14,136
Sacramento	11,924	13,233	13,009	55	120	29,693
San Benito	688	1,846	1,158	1	27	3,287
San Bernardino	3,985	13,909	10,924	21	131	21,466
San Diego	10,232	20,047	9,815	14	226	34,693
San Francisco	42,737	74,996	32,259	140	750	134,505
San Joaquin	5,390	12,977	7,587	13	148	21,604
San Luis Obispo	1,464	4,647	3,383	2	50	7,381
San Mateo	3,319	7,233	3,914	13	79	13,070
Santa Barbara	1,598	6,959	3,997	1	68	10,361
Santa Clara	7,281	18,243	10,962	4	191	29,133
Santa Cruz	1,850	5,703	3,853	0	60	8,964
Shasta	1,287	3,333	2,046	7	47	5,432
Sierra	136	365	229	3	15	613
Siskiyou	2,021	2,907	886	16	43	6,053
Solano	3,234	6,303	3,069	2	47	11,208
Sonoma	2,685	11,299	8,614	2	120	16,995
Stanislaus	4,444	7,352	2,908	8	40	14,176
Sutter	747	1,867	1,120	1	26	2,971
Tehama	1,357	2,296	939	5	46	4,138
Trinity	231	690	459	2	24	1,147
Tulare	3,787	12,515	8,728	6	115	18,123
Tuolumne	1,160	1,666	506	3	31	3,655
Ventura	1,660	5,901	4,841	0	58	8,133
Yolo	1,546	3,249	1,703	3	33	5,555
Yuba	986	2,060	1,047	2	32	3,465
	243,604	597,453	353,849			1,000,977

The Public Be Doomed—A Recipe for Political Pap

By Pro Bonehead Politico

TECHNIQUE is a toothsome word. It is even more than that; it is like somebody or other's talcum powder, it covers a multitude of skins. It is something that none can escape, whatever his occupation, predilection, or bent. There is a technique in the extermination of rodents, in the design of power plants, in the writing of plays, and in the gentle art of cow-pasture pool. This naturally leads, by easy steps, to the consideration of political ownership of public utilities, and the technique, or standards of practice followed by its advocates, in playing upon the emotions, psychological reactions, and other elements of human frailty assumed to be present in the make-up of the average voter.

Here follows a handy little guide by which the political ownership propagandist may approach the task of addressing his audiences with a certain feeling of confidence. The compiler of this text desires to state that he makes no claims of originality in the ideas expressed herein. He has attempted merely to collect the best thought of present day advocates of political ownership, as expressed in the public prints, and in the spoken word.

No really earnest advocate of political ownership should undertake to address a public gathering without first acquiring a thorough appreciation of the utility of generalities. He should under no circumstances be specific in anything he says. It is more than dangerous, it may even be suicidal to his cause. An allegation of fact may be disproved easily, while a generality is like a gas balloon without the skin, a nebulous piece of nothing, whose sole characteristic is the smell it leaves behind.

Then there are the time-honored epithets, dating back to the dawn of civilization, progressing through the ages from ancient Babylon to the great days of Greece and Rome, nurtured in the bosom of Marx, adopted by Lenin and Trotsky in creating that great triumph of the proletariat, Soviet Russia. There are first, the "Crat" triplets, Pluto, Auto, and Aristo. These may be applied ad libitum to anybody opposing political ownership, and may be counted upon to awaken a gratifying ire in the audience. "Money Barons" means the same thing, politically, but is somehow less convincing than the time-honored trio cited above.

Following these, closely, are those epithets that may be called collective. "Predatory Wealth" is one that has a long and useful history behind it, while following closely after, are "Soulless Corporation," "The Trusts," "Wall Street," "Corporation Hirelings," "Power Grabbers," "Big Business," and many other variations of the same theme.

Phrases, too, are useful, especially if delivered in a ringing tone by the fearless champion of the rights of the people who is working his

articulatory organs overtime in the hope of creating for himself the usual government sinecure. We have "The heritage of the **WHOLE** people," "The rights of the masses **MUST** be preserved from the **RAPACIOUS** greed of the **CAPITALISTIC CLASSES**," "The gigantic **POWER** of **PREDATORY** wealth shall **NOT**, nay, **MUST** not crush the **LIFE-BLOOD** from the **MANGLED** bodies of the **TOILERS**."

The power and influence of contrast is vital. For instance, any reference to the "Capitalistic class" should be followed by something about the "Honest



"The life-blood of the **HONEST WORKINGMAN** is being **DRAINED, DROP by DROP**, through the in-i-qui-tous penstocks of the **POWER TRUST** . . ."

workman," the "Wage-earners," or the "Toilers." Sometimes a reference to the "People," capitalized thus, "PEOPLE," will suffice. The object of the game should not be lost sight of at any time. In a few words it consists of (1), trying to make your hearer believe that someone else has something that ought to belong to him, and thus, (2) make the hearer correspondingly sorry for himself, so that he, in turn, may be brought to believe that by voting for political ownership, he may (3) obtain for himself by no further exertion that which somebody else now has, and (4) at no cost to himself.

Now that a few fundamentals entering into the rendition of a speech in favor of political ownership have been thus lightly touched upon, let us outline a specimen oration, that may serve as a skeleton model for any ordinary application.

"Ladies s s s, and gentlemen n n n" (here is a good time to clear your throat and take a sip of water), "We are gathered here tonight to declare our un-dy-ing and un-al-ter-a-ble de-ter-mi-na-tion to preserve for our children and our children's children the pre-cious her-i-tage of our great na-tion-al power resources for which our forefathers fought and died and that now are in the un-scr-u-pu-lous hands of PRED-A-TORY WEALTH." (If this is done right, you ought to get a hand or two at this juncture.)

To resume: "Through trick-er-y and chic-a-ner-y, and de-vi-ous methods, the MON-EY BARONS have SEIZED the power sites that belong to the WHOLE PEOPLE and are making YOU pay tribute to their RAPACITY and GREED. The life-blood of the HONEST WORKINGMAN is being DRAINED, DROP by DROP through the in-i-qui-tous penstocks of the POWER TRUST, that the wheels may turn, grinding out more and more dividends for the PLUTOCRATS.

"This state of affairs shall NOT be permitted to continue. The rights of the PEOPLE MUST be conserved. This, ladies and gentlemen, is the purpose of that GREAT DOCUMENT (insert "California Water and Power Act" or "Bone Free Power Bill"), upon which the duly qualified electors of this GREAT SOVEREIGN state will have an opportunity to express their approval on the first Tuesday after the first Monday in November.

"This bill restores to the PEOPLE their price-less heritage, nay, more than that, it guarantees to the people the enjoyment of power at prices only possible under government ownership and operation, and insures a profit from operations so large that eventually it will do away entirely with all state taxes." (You may doubt your ability to get away with this, but it has been done, nevertheless, and may be done again.)

"And" (here pause, impressively), "do you know that the POWER TRUST in California is actually expending more than EIGHTY-FOUR MILLION DOLLARS in new construction in 1924, and that their program for the next ten years reaches the ASTOUNDING TOTAL of ONE BILLION DOLLARS? Do you know that the California Water and Power Act calls for but FIVE HUNDRED MILLIONS? What, therefore, could be more CLEAR,

what more LOGICAL, than the INEVITABLE CONCLUSION that under Government ownership and control the cost will be but half that of the plans of the MONEY BARONS? Think of it, you voters, HALF the cost, HALF the interest charges, FREE power, TWICE the profits, NO TAXES, and the rapid amortization of the BONDS." (This is a corking good line, but you had better proceed to something else before somebody in the audience gets to asking questions.)

"Today the fish are dying in the streams; the apricots are drying on the trees, and the Sacramento (any other river will do) may yet, like Lot's wife, turn to salt. And why, you may ask, is this thus? Those predacious MILLIONAIRES, those PERNICIOUS, POLYANDROUS PLUTOCRATS (note the alliteration), who by frantic beating on the tomtoms of their vicious propaganda, so bemused and debauched the minds of the PEOPLE that, in 1922 that great, STATESMANLIKE MEASURE, the California Water and Power Act, was defeated by a vote of more than 2½ to 1. Had this GREAT and BENEFICENT MEASURE passed, do you suppose the HEAVENS would have DARED to withhold their BOUNTY? No, ladies and gentlemen. The poor fish, the dried apricots, and other products of the river and soil would this day have been disporting themselves upon their native heath, as all good fish and apricots have a right to do, and the POWER TRUST would have retired to its (or their) platinum-lined offices in the temples of the money-changers, chewing the bitter cud of defeat." (This is a good picture. Pause, for a minute, to let it sink in.)

Now for something about the American flag, and our illustrious forefathers, Washington, Lincoln, Grant and Roosevelt. (Note: It might be advisable to leave out the forefathers if the speaker has a foreign accent, or has not yet taken out his naturalization papers.)

"Here, ladies and gentlemen" (turn to the American flag that, of course, has been draped just back of the speaker), "is the emblem of FREEDOM, LIBERTY, and the EQUAL RIGHTS OF MAN-KIND. This is the BANNER under which our FOREFATHERS (see note above) drenched the soil of the original thirteen colonies with their heart's blood, that we might be preserved from the tyranny of TORY KINGS and PRINCES. Shall we, then, lie supinely on our BACKS while the GREEDY POWER TRUST grinds our bleeding forms into the DUST of SLAVERY, and exacts its DEADLY TOLL for every KILOWATT that lights our lights, curls our hair, toasts our toast and percolates our coffee? NO, I say, a thousand times NO! Then cast your votes for that great initiative measure by which the rights of the people will be restored, by which the trifling sums of money thus provided will be administered in your behalf by a few men so good, so pure, that no restraint, no check, no control and no limitations have been deemed necessary to place upon their acts. Ladies and gentlemen, the modern UTOPIA is at hand. I thank you."

Frantic applause—perhaps.

What Is the Bone-Erickson Bill?

By Norwood W. Brockett

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THE Bone-Erickson Bill (Initiative No. 52) which will be upon the ballot in November in the State of Washington is but a part of a program of state ownership which is being launched in that commonwealth.

The movement originated in 1922 with the attempt to initiate a measure which would have given to all cities in the state the right to engage in practically every line of business or commercial endeavor. This measure was so socialistic that it met with the active opposition of practically all business interests of the state, and its proponents were unable to obtain sufficient signatures to place it on the ballot.

At the last session of the Legislature, the cities of Seattle and Tacoma, which operate municipal light and power plants, were insistent that they be given the right to sell electric energy outside their city limits. Under the laws of Washington, municipalities are created by the Legislature, and have only such powers as are specifically given them. These powers are for the most part governmental. Many years ago, however, the cities were granted the right to construct and operate electric light and power systems for furnishing their own inhabitants with electric energy, on the ground that this was a governmental function. At a later date they were also granted the right to operate public markets. These are practically the only lines of business in which the cities of the state are permitted to engage.

The members of the Legislature argued that if cities were to be permitted to sell electric energy outside their city limits, extending their lines over the greater part of Washington, they then would be departing from any governmental function and would actually be engaging in the light and power business; that the right which they were seeking was a very extraordinary one since they are not allowed to engage in any other line of business activity. The Legislature made an investigation and found that the privately-owned public utilities furnishing light and power service in this state were paying annually in taxes an average of 9.6 per cent of their gross earnings. They felt that if the cities were to be granted the privilege, they should be willing to bear the same burden of taxation to which the private

AS a part of the wave of agitation for the socialization of the light and power industry there has been initiated in Washington the Bone-Erickson Bill. This measure provides that cities engaged in the generation and distribution of electric energy may extend their operations into any part of the state desired without the payment of taxes upon energy sold outside their corporate limits. The true significance of the bill and some of the reasons why it should be defeated are outlined by Mr. Brockett in this article.

companies were subjected. It was also argued by the members of the Legislature from those districts outside Seattle and Tacoma that the undeveloped water powers of the state belonged to all the people of the state and not to the cities of Seattle and Tacoma; that when they were developed by private enterprise the entire investment went upon the tax rolls, and that the annual tax payments were in the nature of a rental for the use of the state's water

powers and that when developed by a municipality the state should receive compensation for their use. The Legislature also believed that the granting of this power was such a radical departure from the fixed policy of the state that it should be passed upon by the people. For these reasons, a bill was passed granting cities owning and operating municipal power plants the right to sell outside their limits, but placing an occupation tax of 5 per cent of the total gross receipts derived from the sale of electric energy both within and without the city limits.

The bill provides that this tax shall be paid into the general fund of the state. The bill also carried a referendum clause which made it inoperative until voted upon by the people. This is known as the Reed Bill, and will be upon the November ballot.

History of the Bill

In the summer of 1923 Carl D. Thompson of Chicago came to the State of Washington, and made a state-wide speaking campaign in favor of state ownership and operation of all light and power facilities. Mr. Thompson is at present secretary of the Public Ownership League of North America. He has long been an active Socialist, closely identified with the Non-Partisan League in North Dakota, was Victor Berger's nominee for the presidency of the United States on the Socialistic ticket and was one of the board of the People's College at Fort Scott, Kansas, during the war, of which Eugene V. Debs was Chancellor.

As a result of his activities, the radical group of the municipal ownership advocates organized the Washington State Super-Power League. Oliver T. Erickson of Seattle with the backing of this league attempted to initiate what was known as the Erick-

son Bill. This measure provided for the creation of districts with power to issue bonds for the acquisition and operation of all light and power properties. It was their intention to create two districts, one in eastern and one in western Washington. The contemplated expenditure would have been in the neighborhood of \$300,000,000.

The Ill-Fated Erickson Bill

In spite of the fact that municipal ownership advocates repeatedly claim that the construction of municipal plants creates no general indebtedness, the Erickson Bill specifically provided that the districts to be organized could issue general bonds for the construction and acquisition of electric properties. It even went so far as to permit the commissioners in charge of these districts to issue these bonds without a vote of the people. It further provided that the commissioners would have the right to place an unlimited tax levy each year upon all of the taxable property within the district, not only for the purpose of paying bond interest, but to make up losses in operation. The bill was so drawn that all of the commissioners would of necessity have been elected from the cities of Seattle, Tacoma, or Spokane, and the country districts would have no representation whatever. In the creation of the districts themselves, the large voting centers could have forced the districts upon the outside territory, whether they desired to be included or not, since the majority vote in the entire district was to be the determining factor. The City of Seattle, for instance, has enough votes within its limits to have compelled almost the entire Puget Sound region to organize and become a part of any district which the City of Seattle might seek to form.

While the bill empowered the commissioners to bond all the property within the district and to levy an unlimited tax upon it each year, it contained no provision whatever obligating the commissioners to give any service to any part of the district unless they so desired. A district could have been formed including all of western Washington, the Skagit Plant of the City of Seattle, purchased by the district, other plants purchased, condemned, or constructed, the entire district bonded and taxed to pay for their acquisition and operation, and every kilowatt of electric energy generated be brought exclusively to Seattle and Tacoma.

Unloading Skagit on the State

The power companies caused to be printed and distributed 45,000 copies of the Erickson Bill. It was the first time in the history of initiative measures in this state that the people were given an opportunity to read and study a measure before being urged hurriedly to sign it. The bill was so vicious and so manifestly an attempt upon the part of the City of Seattle to unload its costly Skagit power plant upon the rest of the state, that the reaction on the part of those who had read and studied the bill made it apparent that its passage was impossible.

The Washington State Super-Power League then turned to the Bone Bill, and their ultimate plan is well described in their official announcement, "We

will spend until July 1 obtaining the 50,000 signatures needed to put the Bone Bill on the ballot and then our time will be devoted to the Erickson Bill." The Bone Bill had been introduced in the last session of the Legislature by Homer T. Bone. It would have given the cities the right to sell electric energy outside their city limits without the occupation tax. Before being initiated, however, the league insisted that the Bone Bill be amended by the addition of sections 2 and 4, so as to contain some of the provisions of the discredited Erickson Bill.

Bone Bill Grants Wide Powers

As initiated, the Bone Bill, in addition to permitting the cities of Seattle and Tacoma to sell electric energy outside their city limits, also empowers them to acquire by purchase or condemnation, all or any of the existing light and power systems in the State of Washington, including the power plants.

These properties are now paying approximately \$2,000,000 a year in taxes. They have an annual payroll in excess of \$7,000,000 and their expenditures in new properties is in excess of \$9,000,000 per annum, all of which goes on the tax rolls to help share the burden of taxation.

The proponents of the measure have repeatedly stated that if it becomes a law, they intend to take either by purchase or condemnation these privately owned properties.

Since municipal plants are not subject to state regulation in Washington, this will create an unregulated monopoly in the hands of these two municipalities. The territory served by these cities outside their city limits will be entirely at the mercy of the cities, both as to the service they will receive and the rates they must pay. The City of Seattle is today selling water outside its city limits, and the rate charged to these consumers is two and one-half times that charged to the citizens of Seattle. The smaller cities are slowly beginning to realize that they could not possibly expect a rate either from Seattle or Tacoma which would enable them to compete with these cities in obtaining new power-using industries.

The bill even permits the cities to condemn distributing lines located within another city, so that these smaller cities could be compelled to take their service from Seattle or Tacoma, even against their wishes.

Getting the Necessary Signatures

It was necessary to obtain 40,000 signatures of registered voters to place the bill upon the ballot in November. Gross misrepresentation was used in obtaining these signatures, ridiculous promises were made as to the rates at which electric service would be furnished, and every possible means was used to stir up the prejudice of the people against the power companies. The municipal employees of the cities of Seattle and Tacoma were given time not only to man booths stationed on the street corners, but also to make a house-to-house canvass throughout the cities. Over 80 per cent of the total number of signatures were obtained in the cities of Seattle and Tacoma, only 3,300 being secured in all of eastern Washington.

The principles of the Bone Bill are the same as those of the Erickson measure. Mr. Bone would have the cities of Seattle and Tacoma do all the light and power business for the entire state, while Mr. Erickson would create two power districts to perform this service. The same group is behind both measures, the group who believe in complete state ownership of practically all lines of business.

The people are being urged to investigate the records of the men behind these measures. They are the same group who attempted to encompass complete state ownership and state socialism in Initiative Measure No. 44.

Advocates Are Good "Guessers"

They are the same group who "guessed" that the dam of Seattle's Cedar River lighting plant would hold water. They were told by the state geologists and competent engineers that the side walls of the impounding basin were of glacial formation and would not withstand the pressure of impounded water. They "guessed" that it would, constructed the dam at a cost of almost \$2,000,000, and the first time they attempted to store water behind it, the side walls blew out, causing damage to property for which the City of Seattle is now being sued for approximately \$1,000,000. The expenditure for the dam is a total loss.

They are the same group who "guessed" that the Skagit hydro plant could be constructed for \$4,800,000. They have already expended over \$11,000,000, and the first unit is not yet completed.

They are the same group who "guessed" that the Seattle Municipal Railway could be operated for a 5c. fare. They tried the experiment for three months, found that the revenues were not sufficient to pay operating cost and maintenance, and learned that it took more than a campaign promise and a resolution of the city council to reduce the cost of transportation.

When the people of Seattle were urged to vote the first block of bonds for the construction of the Skagit plant, they were promised that electric energy would be made so cheap in the City of Seattle, that the people would heat their homes with it, and that power-seeking consumers from all over the United States would flock to Seattle to take advantage of the cheap power rates. The first unit of the Skagit is nearing completion and it is obvious that no reduction of electric rates will be possible. Power rates in Seattle and Tacoma, and all over Washington are low. The same general reduction in rates has taken place in this state as in other parts of the United States in electric power. That it has not been due to municipal competition is conclusively shown by the fact that electric rates are just as cheap in Spokane, Wash., and Portland, Ore., where no municipal competition exists, as they are in Seattle.

The private companies have extended their service throughout the state until 28,000 farmers are connected to their lines. Rural rates in Washington are cheaper than in the Province of Ontario, Canada, under the much talked of Hydro-Electric Commission. The average yearly bill in Washington for all residence consumers is less than \$24—less than \$2

a month. This includes not only lighting of consumer's premises, but all socket appliances, such as vacuum cleaners, electric irons, percolators, etc.—a 30-day service for 24 hours each day at a cost of less than 10 gallons of gasoline. Electric energy throughout all Washington is today the cheapest commodity which goes into the household. It is practically the only item in the cost of living which can be purchased today just as cheap or cheaper than it could before the war.

Upon the vague, indefinite promises of lower rates made by a few politicians who have no electric energy to sell, the people of this state are being urged to plunge into an expenditure which will within a short time exceed \$300,000,000. It will take property now paying annually \$2,000,000 in taxes from the tax rolls and it will give to Seattle and Tacoma an unregulated monopoly of the light and power industry.

Problem Confronting the Private Companies

The problem that confronts the power companies of Washington is to present the truth of the Bone Bill to 400,000 individual voters. There are probably not more than 25 people in the State of Washington who are really back of the Bone Bill, and these are without exception politicians, office holders, or office seekers. However, they are very active and influence a great many voters by promises to make impossible extensions and to put into effect rates which they know are below the cost of service. Practically their entire campaign is being made along these lines and they rarely discuss the provisions of the measure itself.

The bill in no way aids the conservation of the water powers of Washington, nor will its passage or defeat in any manner affect the continued operation of municipal plants.

It is but one part of a carefully prepared plan of complete state ownership and state socialism in Washington, not only of the light and power industry, but of all other forms of business and commercial enterprise.

Its most significant and vicious provisions and those upon which the chief arguments against the measure are based follow:

- (1) The power to levy unlimited taxes.
- (2) The power to issue general bonds placing a mortgage upon all property in the state without a vote of the people.
- (3) The power to build up a state-wide political machine with no limit to the number of employees and no restrictions upon their salaries.
- (4) The right of the large cities to force this machine upon the smaller communities without their consent.
- (5) The power to manipulate this vast machine without regulation, and without restraint against discriminations, unjust charges, or inferior service.

We confidently believe that when the people of the state once realize that the bill is aimed to place the entire electric light and power industry in the hands of Seattle and Tacoma, removing all of this property from the tax rolls, and placing its management and operation in the hands of shifting politicians and office holders, that they will refuse to ratify it. Our problem is to get these facts, before the voters.

The California Water and Power Act

The Attorney General has summarized the proposed measure as follows:

WATER AND POWER. Initiative measure adding Article XIVa to Constitution. Creates board, appointed by governor and subject to recall, authorized to develop and distribute water and electric energy, acquire by any legal means any property therefor and do anything convenient thereto, including using and reserving state lands and waters; gives state and political subdivisions certain preferential rights as against privately owned public utilities selling water or electric energy to public; authorizes issuance of bonds not exceeding \$500,000,000 to further such purposes, requiring board to fix rates to meet expenses and retire bonds in fifty years.

ARTICLE XIVa—WATER AND POWER DEVELOPMENT

Section 1. It is hereby declared to be the policy and purpose of the state to conserve, develop and control the waters of the state for the use and benefit of the people.

Sec. 2. The California Water and Power Board, hereinafter called the board, is hereby established, composed of five members who shall be appointed by the governor, one of whom he shall designate as chairman and executive officer, who shall devote all his time to the duties of the office. The members shall be qualified electors of the state and shall be so appointed as to be fairly representative of the state geographically and of its irrigation and municipal interests. Members shall hold office for four years, except that of those first appointed, one shall hold office until January 1, 1926, one until January 1, 1927, one until January 1, 1928, and two until January 1, 1929. The chairman shall receive a salary of fifteen thousand dollars per annum. The other members shall receive a per diem of twenty dollars while engaged in the performance of duty and all members shall receive their necessary expenses. The legislature may increase their compensation. Each member shall execute to the state such bonds as the governor may require. The legislature shall have power by a two-thirds vote of all its members to remove any one or more of the members of the board from office for dereliction of duty or corruption or incompetency; and it shall be the duty of the legislature to provide by law for the removal of members by recall, following so far as pertinent the provisions of Article XXIII of the constitution, except that a successor of any member recalled shall be appointed by the governor for the unexpired term, as shall be done in the case of a vacancy otherwise arising. A majority of the members shall constitute a quorum for the transaction of business and no vacancy in the board shall impair the right of the remaining members to exercise all powers of the board. The board shall maintain its office at Sacramento.

Sec. 3. The board shall have power:

(a) To acquire by purchase, lease, condemnation, gift or other legal

means, land, water, water rights, easements, electric energy and any other property necessary or convenient for the purposes of this article, and likewise to acquire, and also to construct, complete and operate, works, dams, reservoirs, canals, pipe-lines, conduits, power-houses, transmission lines, structures, roads, railroads, machinery and equipment, and to do any and all things necessary or convenient for the conservation, development, storage and distribution of water, and the generation, transmission and distribution of electric energy. No electric energy shall be purchased by the board at a price to exceed one-half of one cent per kilowatt-hour at the power plant, based upon a fifty per cent load factor, except for standby service as provided in Section Twelve hereof;

(b) To purchase, acquire, produce, manufacture or otherwise provide facilities, materials and supplies, raw or finished, and any property or thing necessary or convenient to the accomplishment of the purposes of this article;

(c) To supply water or electric energy or both to the state, political subdivisions and other users, and, subject to the provisions of this article, to prescribe the terms of contracts, and fix the price therefor and collect the same;

(d) To use the waters and the lands of the state, or any material therein or thereon, and to require the reservation from sale or other disposition of such lands and material as, in the opinion of the board, will be required for the purposes of this article;

(e) To require the reservation of water from appropriation for such periods as it may provide;

(f) In the name of the state to apply for and accept, under the provisions of the laws of the United States or of any state, grants, permits, licenses and privileges in the opinion of the board necessary for the accomplishment of the purposes of this article;

(g) To cooperate and contract with political subdivisions of this state and, with the approval of the governor, with the United States and other states, concerning the conservation and use of interstate and other waters and the generation and use of electric energy and the acquisition, construction, completion, maintenance and operation of works necessary or convenient for the accomplishment of the purposes of this article;

(h) To acquire or construct for political subdivisions distributing systems for water or electric energy bought from the state, upon terms that, in the opinion of the board, will repay to the state within twenty-five years the cost thereof with interest. The title to or in-

terest of the state in such systems shall vest in the political subdivision when paid for;

(i) To sue and be sued, and to exercise in the name of the state the power of eminent domain for the purpose of acquiring any property, or the use or joint use of any property, deemed by the board necessary for the purposes of this article;

(j) To provide itself with suitable office and field facilities, and to appoint, define the duties and fix the compensation of such expert and technical officers, legal and clerical assistants and other employees as it may require, subject to such civil service regulations as the board may provide;

(k) To define projects and to adopt rules and regulations to govern its activities;

(l) To exercise all powers needful for the accomplishment of the purposes of this article and such additional powers as may be granted by the legislature.

Sec. 4. The California Water and Power Finance Committee, herein called the committee, is hereby established, composed of the governor, controller, treasurer, chairman of the board of control and chairman of the California Water and Power Board all of whom shall serve thereon without compensation. A majority of the committee shall constitute a quorum for the transaction of business.

Sec. 5. Bonds of the state of California, not exceeding the sum of five hundred million dollars (unless additional bonds are duly authorized by law), may be issued and sold from time to time to carry out the purposes of this article, and the full faith and credit of the state of California is hereby pledged for the payment of the principal of said bonds as the same mature, and the interest accruing thereon as the same falls due.

Sec. 6. Bonds herein authorized shall be issued and sold by the committee as herein provided and shall be serial bonds, payable in not more than fifty years from date of issuance, and shall be in such form or forms and denomination or denominations, and subject to such terms and conditions of issue, conversion, redemption, maturities, payment, and rate or rates of interest, not exceeding six per cent per annum payable semi-annually, and time or times of payment of interest, as the committee from time to time at or before the issue thereof may prescribe. The principal and interest thereof shall be payable in United States gold coin. Said bonds shall be signed by the treasurer and countersigned by the governor by his engraved signature, and the great seal of the state of California shall be impressed thereon; all coupons thereto shall be signed by the treasurer by his engraved or lithographed signature. The board shall pay, from funds available to it, the expense of issuing and selling such bonds and the necessary

expenses of the committee in connection therewith.

Bonds herein authorized may from time to time first be offered at not less than par as a popular loan, under such regulations prescribed by the committee from time to time, as will in its opinion give the people as nearly as may be an equal opportunity to participate therein, but the committee may make allotment in full upon applications for smaller amounts of bonds in advance of any date which it may set for the closing of subscriptions and may reject or reduce allotments upon later applications and applications for larger amounts, and may reject or reduce allotments upon applications from incorporated banks and trust companies for their own account and make allotment in full or larger allotments to others, and may establish a graduated scale of allotments, and may from time to time adopt any or all of said methods, should any such action be deemed by it to be in the public interest; provided, that such reduction or increase of allotments of such bonds shall be made under general rules to be prescribed by said committee and shall apply to all subscribers similarly situated. Any portion of the bonds so offered and not taken may be otherwise disposed of by the committee in such manner and at such price or prices, not less than par, as it may determine. The committee may cancel any of the bonds so offered and not taken and reissue them in different denominations.

Sec. 7. Bonds herein authorized shall be issued and sold only for the acquisition of such property and rights, and for the acquisition, construction, development, completion, operation and maintenance of such projects as the board may deem necessary or convenient to the accomplishment of the purposes of this article; provided, that from time to time upon written requisition of the board the committee shall issue and sell bonds not exceeding in the aggregate five million dollars, the proceeds of which shall be placed in the water and power revolving fund in the state treasury, which fund is hereby created, to be used by the board for the purpose of defraying its expenses, acquiring property, rights, facilities, materials and supplies, carrying charges during construction and meeting other costs incurred in carrying out the purposes of this article; provided further, that if at any time the revenues from projects shall be insufficient to pay the interest on and principal of outstanding bonds as the same fall due the committee with the consent of the governor, in order to avoid appropriations from the general fund and resulting taxation, may issue and sell bonds to provide funds required to make such payments of interest or principal.

Except as otherwise provided in this article, the committee shall issue and sell bonds only upon the written requisition of the board stating the amount of money required and the purpose for which it is to be used and accompanied by a duly authorized certificate of the board describing the property or rights to be acquired or the project proposed, and stating the estimated cost thereof and showing the same to have been investigated and approved and, in the case of a project, that plans and estimates therefor, a copy of which shall be an-

nexed to such certificate, have been prepared and adopted by the board and further certifying that, in the opinion of the board, the revenue from the property or rights to be acquired or from the proposed project, together with available revenues from other projects, will be sufficient to pay within fifty years in addition to other necessary expenses, the principal and interest of the bonds requested to be issued. The proceeds of the sale of such bonds shall be placed in the treasury and shall be used by the board exclusively for the purposes for which the same were issued.

Sec. 8. The board shall establish such rates for service as in its judgment will provide, in addition to the expenses of operation, maintenance, depreciation, insurance and reserve for losses, funds to pay the principal and interest of all bonds issued under this article, as the same fall due, together with all sums which may be advanced from the general fund and interest thereon as herein provided.

Each project, as the same may be defined by the board, shall be charged by the board with its cost, which shall include its proper share as fixed by the board of all expenditures from the water and power revolving fund and the share so charged shall be credited to such revolving fund which shall be replenished, to the extent of the amount so credited, from the proceeds of bonds sold to provide funds for the cost of such project. The board shall establish such rates for the service furnished by each project as in its judgment will pay, within fifty years, such cost thereof, and the expenses of operation, maintenance, depreciation, interest, insurance and reserve for losses; provided that where the rates are intended to provide for the repayment of expenditures made in acquiring or constructing distributing systems for political subdivisions, they shall be so fixed as in the judgment of the board will repay the amount of such expenditures with interest within twenty-five years. The board may change rates when in its opinion advisable to meet changed conditions and shall always keep its rates as near the amount required to pay such cost and expenses as practicable, and shall fix similar rates under substantially similar conditions.

Sec. 9. All revenues of the board, except proceeds from the sale of bonds, shall be paid into the state treasury and shall be applied first, to payment of the expenses of the board, costs of operation, maintenance, depreciation, insurance and losses, and second, to the payment of interest on and principal of said bonds.

If at any time the moneys in the state treasury applicable to the payment of interest or principal of said bonds, shall be insufficient to pay the same as it falls due, moneys shall be temporarily advanced from the general fund for that purpose, and there is hereby appropriated from the general fund in the state treasury such sum annually as will be necessary to pay such interest and principal, and there shall be collected each year in the same manner and at the same time as other state revenue is collected such sum in addition to the other revenues of the state as shall be required to pay the sums appropriated for payment of interest

and principal as herein provided, and it is hereby made the duty of all officers charged by law with any duty with regard to the levy and collection of said revenue to do and perform each and every act which shall be necessary to collect such additional sum.

All moneys paid from the general fund in the state treasury for principal of or interest on such bonds shall be returned into said general fund out of the revenues of the board as soon as the same become available, together with interest thereon from the several dates of such advances until so returned at the rate of six per cent per annum compounded semi-annually.

Sec. 10. Out of any money in the state treasury not otherwise appropriated, the sum of two hundred and fifty thousand dollars is hereby appropriated to be credited to the board and an equivalent amount shall be returned into the general fund in the state treasury out of the first moneys available in the water and power revolving fund.

Sec. 11. The committee may establish such funds in the state treasury as in its judgment may be required to carry out the purposes of this article.

Moneys herein provided for the board shall be drawn from the treasury by warrants of the controller on demands made by the board and allowed and audited by the state department of finance.

The board, the controller, the treasurer and the committee shall keep full and particular account and record of all their proceedings under this article, and shall transmit to the governor annually a report thereof, not less than one thousand copies of which shall be printed, to be by the governor laid before the legislature biennially, and all books and papers pertaining to the matters provided for in this article, shall at all times be open to the inspection of any officer or citizen of the state. All accounts of receipts and disbursements shall be audited by the state department of finance.

Sec. 12. The state and political subdivisions shall have a preferred right to water and electric energy controlled by the board as against privately owned public utilities selling water or electric energy to the public and no contract or act of the board shall interfere with such preferred right. As between those otherwise equally entitled, the board shall supply water or electric energy to political subdivisions near the source of supply, to the extent of their reasonable needs, in preference to those more remote.

The board shall not supply water to a privately owned public utility for the production of electric energy and shall not supply directly or indirectly to privately owned public utilities which sell electric energy or water to the public more than twenty per cent of the total amount of electric energy or water under its control, and contracts therefor shall not extend over a longer period than five years, or be renewed before one year prior to their expiration. Before making or renewing such a contract, the board shall publish a notice of its intention so to do, at least six days each week for a period of sixty days, in at least one newspaper published and circulated in this state, and designated

by order of the board for that purpose; and at least thirty days' prior notice shall be mailed to the legislative bodies of all counties and incorporated municipalities and to irrigation districts situate within the territory which, in the opinion of the board, may use such electric energy. Public utilities taking such contracts shall be required to provide the board with standby service at reasonable rates.

Sec. 13. Nothing contained in this article shall prevent any political subdivision itself, or in cooperation with other political subdivisions, from developing any water or electric energy owned or controlled by it; but plans for any such development hereafter proposed shall be submitted to the board for suggestions and criticism, so that the cooperation of the board may be secured, if practicable, for the fullest development of the proposed project. The board may acquire and develop any such project unless the political subdivision claiming the same shall have adopted plans and estimates for the development, and authorized bonds or made other provision to cover the cost thereof, or shall do so, within two years after the board shall have notified such political subdivision of its readiness to proceed with such development.

Sec. 14. In any proceeding in emi-

nent domain brought by the board under the provisions hereof, the determination of the board that the taking of the property described in the complaint is necessary for the purposes hereof, shall be conclusive evidence of such necessity. In any such proceeding the state may take immediate possession and use of any property required for the purposes of this article, by paying into the court such amount of money as the court, upon five days' notice to the adverse party, may determine as reasonably adequate to secure to the owner of the property sought to be taken immediate payment of just compensation for such taking and any damages incident thereto.

In any such proceeding, trial by jury may be demanded and secured by any party thereto, and any proceeding begun under the provisions of Section 23a of Article XII of this constitution shall be dismissed on the filing therein of a written demand by such party. Such demand must be filed within thirty days after service upon such party of process in such proceeding.

Property appropriated to public use may be taken under the power of eminent domain for the purposes hereof, but, except as otherwise herein provided, this article shall not confer power to take the property or works owned or

controlled by any political subdivision used or proposed to be used for supplying water or electric energy, or both, without its consent.

Sec. 15. All public officers, boards, commissions and agencies shall make available to the board all data and information in their possession required by the board, and shall render every assistance in their power in carrying out the provisions of this article.

Sec. 16. As far as practicable, consistent with the speedy development of its operations, the board shall so shape its plans as to furnish work during periods of unemployment.

Sec. 17. The term political subdivision, as used in this article, is hereby defined to mean and include any public board, public quasi corporation, public corporation, water district, lighting district, municipal utility district, public utility district, irrigation district, municipal corporation, town, city and county, city or county, having authority to contract for the purchase, sale or use of water, water power, or electric energy, but shall not be construed to include any privately owned public utility.

Sec. 18. This article is self-executing, but legislation may be enacted in furtherance of its purpose and to facilitate its operation.

The Bone "Free" Power Bill

INITIATIVE MEASURE NO. 52 AN ACT

Authorizing cities and towns to use, purchase, sell and dispose of electric current inside or outside their corporate limits; to acquire, construct, maintain and operate inter-tie lines, transmission lines and distribution systems; and to exercise the right of eminent domain in aid of the acquisition, construction, repair, operation, extension or betterment of any plant or system for generating, transmitting or distributing electricity.

BE IT ENACTED BY THE PEOPLE OF THE STATE OF WASHINGTON:

Section 1. Any city or town shall have the right to sell and dispose of electric current to any other city or town, governmental agency or municipal corporation, or to any person, firm or corporation, inside or outside its corporate limits, and to purchase electric current therefrom. No such purchase or sale of electric current shall subject or make liable any city or town, or any other purchaser or seller of such electric current, to any tax on account of such purchase or sale.

Section 2. Any city or town is hereby authorized to acquire, construct, purchase, condemn and purchase, own, operate, control, add to and maintain, electric generating plants, lands, easements, rights, rights-of-way, franchises, distribution systems, sub-stations, inter-tie or transmission lines, to enable it

to use, purchase, sell and dispose of electric current inside or outside its corporate limits, or to connect its plant with any other electric plant or system, or to connect parts of its own electric system.

Section 3. Whenever in aid of the work of construction, repair, operation, extension or betterment of any electric plant or system of any city or town, or in aid of the work of logging or clearing a reservoir or impounding site therefor, the owner, lessee or operator of any railroad not a common carrier, shall refuse, for a reasonable consideration to be mutually agreed upon, to transport any materials, machinery, equipment, logs, timber products, supplies or labor, to or from the place or places on said railroad nearest or most convenient to the point or points where such work of construction, repair, operation, extension or betterment, or such work of clearing or logging in such reservoir or impounding site, is being done or performed; or whenever the owner, lessee or operator of any booming, rafting or sorting works, shall refuse, for a reasonable consideration to be mutually agreed upon, to boom, raft or sort, any logs, or lumber products, removed or to be removed by or under the direction of such city or town, from any lands used in such work, then and in that event such city or town shall be and is hereby empowered to acquire by condemnation, the right to use and damage such railroad, and sufficient of its equipment, and such booming, rafting or sorting works, for such time as shall be deemed reasonably necessary

by such city or town to accomplish such work, after just compensation has been first made or paid into court for such owner, operator or lessee.

Section 4. Any city or town is hereby authorized to exercise the power of eminent domain hereby granted, under the same provisions and procedure as is or shall be provided by law for the condemnation of private property for any of the corporate uses or purposes of such city or town. In exercising the power of eminent domain for the public purposes herein enumerated or specified, by such city or town, it shall not be a defense or an objection thereto that a portion of the electric current generated or sold by such city or town will be applied to private purposes, provided the principal uses intended are public.

Section 5. Nothing in this act shall authorize or entitle any city or town to acquire by eminent domain any electric plant or any part of such utility now or hereafter owned by any other city, town or municipal corporation.

Section 6. If any part of this act shall be adjudged to be invalid or unconstitutional, such adjudication of invalidity or unconstitutionality shall not affect the validity or constitutionality of the act as a whole, or of any part thereof, not adjudged invalid or unconstitutional. The provisions of this act shall be cumulative, and nothing herein contained shall abridge or limit the powers of cities or towns under existing laws.

INDUSTRIAL NEWS



Water and Power Act Condemned by San Francisco Club

Reiterating the stand it took in 1922, the Commonwealth Club of San Francisco has condemned the proposed California Water and Power Act on nine separate counts. An exhaustive study of the power industry of California and of the Act itself was presented to the members of the club at a meeting at the St. Francis Hotel on Aug. 21 by F. H. Fowler, consulting engineer, who is chairman of the club's water and power section.

The nine objections to the measure as set down in Mr. Fowler's report follow:

1.—For many years to come we may expect a steadily increasing power demand, but at a gradually falling rate.

2.—The rapidly growing demands for power are being and will continue to be met by development programs now being carried out by municipalities operating successfully under existing laws, or by public utilities operating under complete public regulation.

3.—A state-owned system and public utility system can not long exist either in direct competition or in satisfactory cooperation, and if the state is to go into the power business it must frankly face the problem of operating a state-wide system.

4.—If this phase alone of the program proposed by the act is carried out the bond issue will be almost immediately absorbed, the state debt will be increased to more than one and one-half times the entire cost of the Panama Canal and the combined state, county and municipal debt increased to somewhat over the entire interest bearing debt of the United States when the world war started.

5.—In addition, drafts on the general fund (derived from taxation) would start immediately, would bear interest at 6 per cent and would rapidly mount, equaling the total of the initial bond issue by the end of the first decade, even if the state confined itself solely to power development, and much more if it undertook other activities.

6.—From our federal venture into reclamation we may draw the lesson that state ownership of water and power would not guarantee against: first, recurring appropriations; second, losses through ill-advised undertakings; third, deadening of individual and local community initiative. The government was driven into the program, as no other agency could undertake the development. California has no such incentive for taking over the water and power resources within our boundaries, for they are being developed by our public utilities and municipal systems under adequate state control.

7.—Resulting dilution of the state credit would tend to raise the borrowing rate nearly if not completely up to the rate now paid by electric utilities, thus offsetting one of the most valid public ownership arguments.

8.—Owing to its wide extent a state-owned system would be far more difficult to operate economically than municipally-owned systems with which we are familiar today; there would be greater opportunity for loose management and political influence, and, as a result of these factors, results obtained would not compare with those already secured by municipal ownership.

9.—While there may be instances where public service corporations have been at fault, such instances are growing rarer and may be handled in the most drastic manner through existing state legislation or regulative bodies without recourse to an entire departure from present methods.

As is customary at such meetings of the Commonwealth Club, arguments for and against the measure were presented

following the reading of the report. A statement read by the president of the club outlining the stand of the Water and Power League, the organization sponsoring the Act, brought forth the fact that this body was unwilling to furnish a speaker to present the arguments in favor of the measure. This side of the question was presented by Darrow Beard, attorney of Santa Rosa, Calif., one of the club members. A. E. Boynton, San Francisco attorney, opposed the act. His paper will be printed in an early issue of the Journal of Electricity.

In the general discussion that followed, Walter Stalder, mining engineer, stated that the mining interests of the state were opposed to the measure because it gave no consideration to the mining industry's needs for water.

City Gets Large Bill for Extras on Gorge Creek Tunnel

With the filing recently by R. C. Storrie & Company, Seattle, Wash., contractors for the Gorge Creek tunnel work of the Skagit development, of a claim for \$683,097 over and above the contract price of \$2,203,865, the city officials face a final adjustment with the tunnel contractors which may go to the courts for settlement. This action of the contractors is interpreted at the city hall as a counter move anticipating that the city may attempt to exact the contract penalty of \$500 per day for a total of ten and a half months' delay in the completion of the work. The contractors claim exemption from this penalty on the ground that the delays were the fault of the city.

In its claim, the contracting company listed thirty-five items, the most important of which were: \$197,534.70 for additional concrete used in tunnel lining; \$121,505.79 for additional excavation over contract figures; \$72,005.40 for additional cement; \$17,114.09 for fine sand furnished and not in specifications; and \$170,423.96 for miscellaneous claims previously reported to the Board of Public Works. The claim has been referred to T. J. L. Kennedy, corporation counsel, for an opinion as to its validity.

In the meantime, the Board of Public Works, acting upon the written recommendation of Carl F. Uhden, chief engineer of the Skagit development, has formally accepted the Gorge Creek tunnel as completed. Water was turned into the tunnel Aug. 2, and Engineer Uhden reports that the controls have been tested and are functioning satisfactorily. It is said that minor troubles on the development have delayed temporarily the bringing in of Skagit energy, but that by Sept. 1 everything will be in readiness to deliver power to Seattle over the 100-mile transmission line.

Amended Application Filed for Owens River Project

The Southern Sierras Power Company has filed an amended application for license covering the project in Owens River Gorge for which the City of Los Angeles also is claiming rights. The lands involved in this power site have been the subject of legislative action. In 1906 Congress authorized the sale to Los Angeles of certain of these lands in connection with its aqueduct project. On this authority the city bought up large areas in the river valley. Some contend that these purchases exceeded any area contemplated by the act of Congress. The General Land Office at one time questioned the validity of the transaction, but the Secretary of the Interior confirmed the sale of these lands to the city. A patent finally was issued in 1913 but it contained certain reservations as to the outstanding water rights.

An act approved June 5, 1920, extended the scope of the original grant but contained a number of conditions which invite controversy. The Southern Sierras company contends that these reservations and conditions were inserted in the law to protect its established rights and those of its predecessors in this section of the Owens River.

On this assumption the Southern Sierras company applied for the license which is in direct conflict with the Los Angeles program. The point now has been reached where the Federal Power Commission must make a decision in the matter. While final action has not been taken it is understood that the study indicates that it is not within the jurisdiction of the commission to question the validity of the patent granted by the Secretary of the Interior. For this reason the indications are that it will be necessary to deny the application of the Southern Sierras company, which apparently leaves the courts as the only recourse to which the power company can appeal.

Auxiliary Power Needed.—The Wilapa Power Company, South Bend, Wash., will order a new 200-hp. semi-Diesel engine to be used as an auxiliary plant to serve its customers during the time when the South Fork water power plant is not able to handle the load. Improvements will cost \$20,000.

City of Santa Cruz Applies for Power Site.—The Division of Water Rights of the California Department of Public Works has received an application from the City of Santa Cruz, Calif., for a permit to appropriate 200 sec.-ft. of water from the San Lorenzo River in Santa Cruz County. The city proposes to develop 3,977 hp. at the site.

Washington Utility Doubles Generating Capacity

Extensive Improvements to Generating Plant, Substations and Distribution Lines Are Carried on at Aberdeen

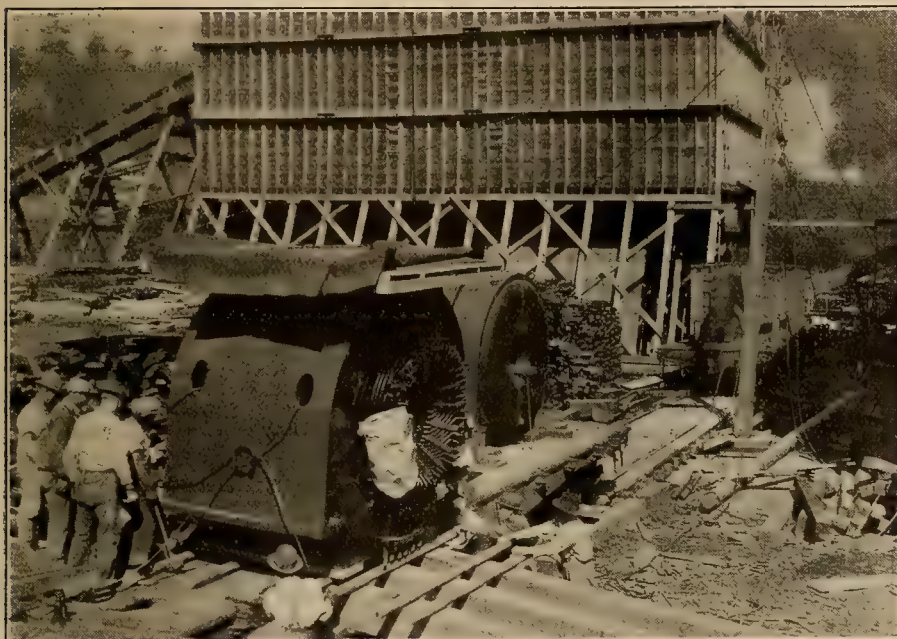
Comprising the largest single improvement to its properties undertaken since it first began operation, the Grays Harbor Railway & Light Company, Aberdeen, Wash., is now installing a 5,000-kw. steam unit that will practically double its present generating capacity. A new 5,000-kw. substation to handle the increased output is being built and extensive improvements to its distribution system are being made. A new boiler and auxiliaries for the steam unit, a switchboard with automatic control, and six feeder regulators are also a part of the proposed plan.

The generator, built by the Westinghouse Electric & Manufacturing Company, is to be installed in the Electric Park steam station midway between

4,150-volt, three-phase, four-wire "Y." The construction work is being done by Sanderson & Porter under the direction of R. V. Rosenbaum.

New Boilers Increase Capacity At Large Steam Plant

Additional boiler capacity to increase the kilowatt-hour output and to furnish more steam for the increasing heating business, is the aim of the \$300,000 improvement to the Lincoln Street steam plant of the Northwestern Electric Company, Portland, Ore. A new building is being built to house two 1,000-hp. Stirling boilers which will be added to the six present boilers of 4,932 hp. at this plant. This addition will provide



Unloading generator parts for steam plant at Aberdeen, Wash. Hog fuel bin is in the background.

Aberdeen and Hoquiam. A General Electric Company switchboard, remote controlled, with truck-type generator and feeder panels and steel enclosures, is part of the indoor equipment that will be installed in the station. This company will also supply transformers for the substation. The boiler to be placed in the Electric Park station is a Casey-Hedges, 1,090 hp., Stirling type, designed for 300-lb. pressure.

The present generating equipment in the Electric Park station consists of a 1,000-kw. and a 400-kw. generator. Other generating equipment owned by the company consists of a 1,000-kw. unit at the Anderson & Middleton Lumber Company's mill at Aberdeen, and a 3,000-kw. unit at the Gray's Harbor Lumber Company's mill at Hoquiam. These units are operated in connection with the generating equipment at each mill and an exchange of current between the mills and the power company has been in effect for some time.

To provide additional capacity in the distribution system in Aberdeen, the feeders are being changed from 2,300-volt, three-phase delta to operate at

enough energy to operate to full capacity the two 10,000-kw. turbo-generator units in the plant, and furnish enough steam to heat the entire downtown district of Portland, where the company's steam heating business is concentrated.

The steam heat generated in the plant is transmitted one and one-half miles underground to the center of its application. This is said to be the longest high pressure steam line in the United States. The new boiler installation is expected to be completed for operation by Oct. 1.

Turbines Ordered for Hawaiian Project.—The Pelton Water Wheel Company of San Francisco has just received an order for three horizontal impulse turbines of 1,950 hp. each to be installed in the Kehaka plant of the Hawaiian Commercial Sugar Company of Maui, T. H. The power to be developed will largely be used for irrigation pumping. The turbine equipment will be handled through the firm of Alexander & Baldwin, of San Francisco.

Status of P. G. and E. Plant to Be Settled by Commission

Because of a question raised in connection with the Electra plant of the Pacific Gas and Electric Company on the Mokelumne River in California, the Federal Power Commission must render a decision as to the exact percentage of public lands in the project area which is to determine whether or not a major license must be issued.

The Electra plant has been in operation 14 years. The company contends that the public lands involved were put to this use before legislation was passed requiring federal rights. It is willing, however, to be put under that type of license which covers a minor part of the project which does not require special accounting to the federal government. The company is of the opinion that were the case taken to court a decision would be forthcoming which would free it from taking out any license.

In cases previously passed upon the commission has made no effort to determine the exact line of demarcation between major and minor licenses, but the inclination apparently has been to regard a major license necessary when public lands exceed 15 per cent of the project area.

The structures of the Electra project occupy approximately equal portions of public and private lands but if the reservoirs are considered the proportion of public lands is reduced to 10 per cent. In this particular instance the public interest is not affected since the plant for many years has been under the jurisdiction of the state, but the commission's decision in this case will be of significance because of its bearing on future applications.

Los Angeles Passes \$16,000,000 Power Bond Issue

Power bonds aggregating \$16,000,000 were sanctioned by the voters of Los Angeles at the general primary election Aug. 26, 1924. As this issue goes to press the final count, with the exception of a few scattering precincts, showed 105,670 in favor of the bonds and 12,783 against them. This was the third power bond election within fifteen months, previous issues of \$35,000,000 and \$21,000,000 having been defeated in June, 1923, and May, 1924, respectively.

The present bond issue is the result of a survey of the system of the Los Angeles Bureau of Power and Light made by engineers of the California State Railroad Commission at the request of the Los Angeles Public Service Commission. (Journal of Electricity, p. 67, July 15, 1924.) The survey showed that this sum would be necessary to bring the municipal distributing system up to capacity and to provide for extensions and betterments during the next three years.

Pacific Coast Steel Gets Contract for Tower Line.—The Los Angeles Gas & Electric Corporation has awarded the contract for steel towers for the transmission line of that company between its new Seal Beach steam plant and Los Angeles, to the Pacific Coast Steel Company. The line is to be 25 miles long and is to be of twin circuit construction.

Members of P.C.E.A. to Receive Journal of Electricity

At a meeting of the executive committee of the Pacific Coast Electrical Association held in San Francisco Aug. 14, arrangements were perfected whereby the Journal of Electricity will be sent to all members of the association without extra charge. The reasons for this step are outlined in the accompanying statement to the membership by Samuel H. Taylor, secretary of the association. The arrangement goes into effect Sept. 1.

The step was based upon the desire of the officers of the association to make the organization a greater force for the betterment of the industry and those whom it serves. It was believed that if a medium could be obtained for carrying the story of the industry and the activities of the association to all of the members at regular intervals, greater interest in the organization will be maintained.

The Journal of Electricity in the future will act as an open forum for the interchange of ideas between the members and will also carry announcements of all association activities.

Denver Cooperative League Holds Fourth Annual Picnic

One of the most outstanding picnics and outdoor frolics ever staged for the electrical industry of Denver, Colo., was held Aug. 7, under the auspices of the Electrical Cooperative League of that city. The gathering was the Fourth Annual Picnic of the league and was attended by approximately 1,000 electrical men, their families and friends. The picnic was staged at a local amusement park.

A truck load of prizes, most of them electrical appliances and varying from flashlights to a washing machine as the capital prize, was contributed by the united electrical industry for award to successful contestants and participants in the races and various stunts.

Featuring the all-afternoon program of amusements were an indoor baseball game of three innings between the Denver central station representatives and the rest of the industry, a half-dozen races for the children, boys and girls and men and women, a wheelbarrow race and balloon race, the "smoke-house" for men, and lastly, the "dizzy-issie" race and aviation meet.

A grand prize drawing in which fifty prizes were awarded marked the close of the afternoon program and was followed by a basket picnic dinner.

Details of the picnic were worked out

PACIFIC COAST ELECTRICAL ASSOCIATION

AFFILIATED WITH THE
NATIONAL ELECTRIC LIGHT ASSOCIATION

OFFICERS
PRESIDENT, P. A. LEACH, JR.
VICE-PRESIDENT, WILLIAM BAURMYTE
VICE-PRESIDENT, S. WALDO COLEMAN
TREASURER, JAMES F. POLLARD
SECRETARY, SAMUEL H. TAYLOR
527 RIALTO BUILDING
SAN FRANCISCO, CAL.

COMMITTEE CHAIRMEN
PUBLIC POLICY, R. H. BALLARD
PUBLIC RELATIONS, R. E. FISHER
PUBLICATION, AL. C. JOY
TECHNICAL, P. O. CRAWFORD
COMMERCIAL, A. M. FROST
ACCOUNTING, E. W. HODGES
PURCHASING, H. O. MCKEE
AND STORES, S. C. HAYES, JR.
PERSONNEL, R. J. CANTRELL
INSURANCE, SAMUEL H. TAYLOR
MEMBERSHIP,



OFFICE OF THE SECRETARY
ROOM 527 RIALTO BUILDING
MISSION AND NEW MONTGOMERY
SAN FRANCISCO
TELEPHONE GARFIELD 2781

EXECUTIVE COMMITTEE
R. W. ALVORD, SAN FRANCISCO
JAMES B. BLACK, SAN FRANCISCO
C. L. CHAMBLIN, SAN FRANCISCO
F. O. DOLSON, RIVERSIDE
P. M. DOWNING, SAN FRANCISCO
A. M. FROST, FRESNO
W. L. FROST, LOS ANGELES
H. L. HARPER, LOS ANGELES
R. J. HOLTERMANN, SAN FRANCISCO
C. T. HUTCHINSON, SAN FRANCISCO
L. M. KLAUBER, SAN DIEGO
K. E. VAN KURAN, LOS ANGELES
AND THE OFFICERS

TO ALL MEMBERS
of the
PACIFIC COAST ELECTRICAL ASSOCIATION

August 22nd, 1924.

Beginning with this issue, all members will receive a yearly subscription to the Journal of Electricity, without extra charge.

This action was taken by the Executive Committee at a meeting held in San Francisco on August 14th, 1924.

It has been recognized by the Officers and Executive Committee that in the Association lies an opportunity to form an organization that should constitute a great force for the betterment of the industry and those whom it serves:

That such a task is extremely difficult when the sole means of sustaining interest in the Association is through the periodical committee meetings and the Annual Convention, the attendance at which rarely represents more than 25% of the membership:

That, therefore, if some medium could be obtained for carrying the story of the industry, and the part played by the Association in the welfare of that industry, to all of its members at regular intervals, it would prove to be a potent force, not only in maintaining interest in the Association, but in building up its membership to a total more in keeping with its size and importance.

Thus, through the publishers of the Journal of Electricity, an arrangement has been made by which all members of the Association will receive a subscription to the Journal, as well as the Bulletin of the National Association, and a copy of the Annual Proceedings without increase in their annual dues.

The 'Smiles' Campaign showed some 34,000 members of the electrical industry in California alone. There are but 2,000 members of the Pacific Coast Electrical Association. The cost for Class 'B' membership is only \$3.00 per year. It is proposed that on October 1st, next, a campaign for new Class 'B' members be inaugurated, and, in view of the additional consideration now offered, every existing member should not only gather fresh interest and profit from his own membership, but should constitute himself one of the membership committee charged with the responsibility of bringing in one, two, or three new members.

All future announcements, etc. for the Association will be carried in the Journal. Watch for them.

Yours very truly,

SH:CH

Samuel H. Taylor
SECRETARY.

An open letter to members of the Pacific Coast Electrical Association.

by the general entertainment committee of the league, as follows: J. C. Davidson, chairman, F. L. Easton, E. A. Scott, C. E. Addie, R. W. Elliott and E. E. Stettler, and the following sub-committees: ticket committee, A. E. Bacon, chairman, Clarence Keeler, Dean D. Clark, W. A. J. Guscott, P. Harry Byrne, H. W. Fishburn, H. P. Whitten and Harry Schockett; prize committee,

E. C. Headrick, chairman, John J. Cooper, R. G. Gentry, C. G. Scott, M. Rosenthal, D. D. Sturgeon, M. E. Lanning, Henry Tewksbury and N. E. Lawrence; and the sports committee, V. N. Garretson, chairman, O. L. Mackell, F. F. McCammon, A. R. Woolley, K. B. Schmidt, W. J. Laufenburg, W. R. Kaffer, J. E. Bullock, M. E. Gantz and J. Van Dyk.



Members and guests of the Electrical Cooperative League

a fact



*1/4 of all our
school children have
defective vision!*

*Incorrectly placed or glaring light in the home is an outstanding
cause of poor eyesight and children are the chief sufferers*

THE HOME LIGHTING CONTEST

—sponsored and supported by the entire electrical industry is a cooperative educational activity designed to give to the public, through the school children, a better knowledge of the proper use of electric light, and indicate ways in which existing home lighting conditions may be improved. The major result will be less eye trouble and better national health, and in addition better lighted, more beautiful homes.

To arouse the interest of the children and direct their attention to the importance of better home lighting, it is presented to them in the form of a contest; and awards are offered which range upward in value to University Scholarships and the prize \$15,000 electrical home.

The Home Lighting Contest does not interfere with regular school work and requires none of teacher's time. It is possible, however, that the children may ask for teacher's help or opinion. Therefore, the electrical people in your city or locality stand ready to furnish full information concerning this great international movement and offer their full cooperation to the end that in future years there will be less eye trouble.



This 28-page primer on Home Lighting will be furnished free to any school teacher and every school child entering the Home Lighting Contest.

The primer is the "text book" of the contest, explains it fully, and contains information of value to every child, parent and teacher.

Your local electrical people will gladly supply you with a quantity of primers for distribution in your class.



The
LIGHTING EDUCATIONAL COMMITTEE
680 Fifth Avenue . . . New York, N.Y.

Advertisements of this type will be used by the Lighting Educational Committee to call attention to the essay contest.

Plans for Better Lighting Campaign Are Discussed

Twelfth Regional District Committee, Under R. E. Fisher, Maps
Procedure for California, Nevada and Arizona

At a meeting held in San Francisco on Aug. 12, the advisory board of the California Electrical Cooperative Campaign discussed ways and means of carrying into effect the plans of the campaign for Better Lighting within

the twelfth district, in which are included the states of California, Nevada and Arizona. R. E. Fisher, chairman of the Cooperative Campaign, has been appointed regional director for the Better Lighting Campaign, and in his

dual capacity is directing the work in this district. Mr. Fisher presided at the meeting, and through Victor Hartley, executive secretary of the campaign, presented a working plan that was characterized by J. M. Hickerson, of Cleveland, Ohio, who is covering the United States in behalf of this movement, as the best he had yet seen. In brief, the plan provides for obtaining authorization to approach the schools through the proper authorities, and advertising the school children's contests through the official publications of the school teachers, through the leading newspapers in various communities, and through the radio broadcasting stations. State and district committees are to be appointed, through which literature and general information will be distributed. To enlist the cooperation of the electrical industry, contact will be provided through the various electric clubs, contractor-dealers' associations, and jobbers' organizations. Primers telling the story of the movement and giving the conditions of the various prize contests as well as registration cards will be obtained from the Society for Electrical Development and distributed through the local committees.

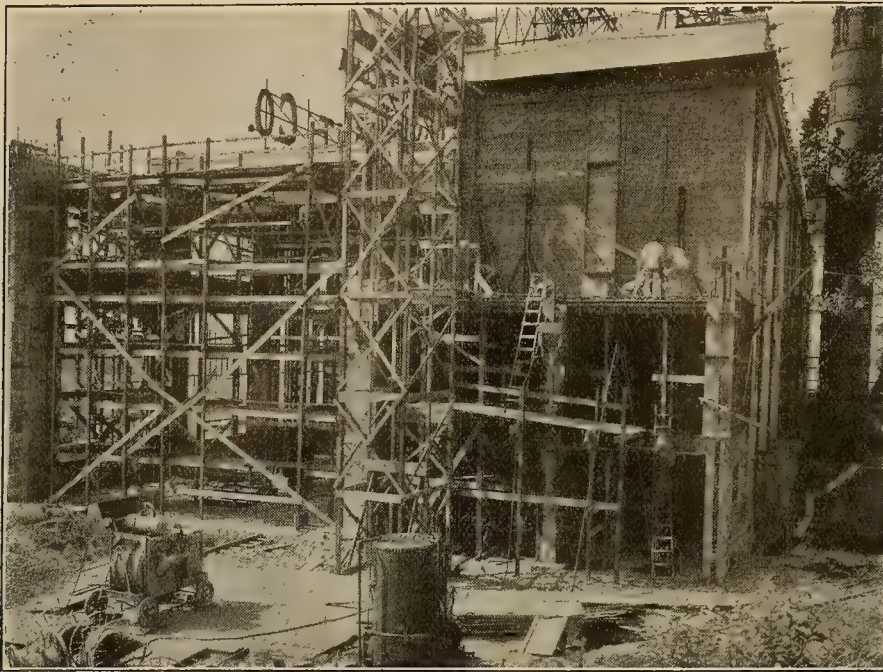
In addition to the prizes provided for national competition, in which is included as first prize for the best essay on better home lighting a \$15,000 electric home, there will also be a number of local prizes, furnished from the local fund raised for meeting the expense of the local activity. In all, 21 districts are laid out in the three states covered in the twelfth national district, in which the focal points are the population centers within each district.

In telling the story of the national movement, and the benefit to the industry, Mr. Hickerson directed the special attention of the meeting to the fact that of the \$500,000 raised, some \$300,000 would be expended for national consumer-advertising, thus creating a reservoir of good will for the better-lighting idea in which the local interests could participate through their own co-operative effort. To sell the idea of the benefits of better lighting, the school children formed the most effective points of contact, for the interest of the parents could not help but be forthcoming.

A. A. Brown, of the Westinghouse Electric & Manufacturing Company, New York City, and R. M. Alvord of the General Electric Company, San Francisco, who had just returned from the East, voiced the viewpoint of the manufacturers in their whole-hearted support of this movement.



at the Fourth Annual Picnic of that organization.



Extension being added to White River power house to permit installation of fourth unit.

Hydro Unit Nearing Completion at White River Plant

The addition of a fourth hydroelectric unit at the White River plant of the Puget Sound Power & Light Company, Seattle, Wash., is progressing satisfactorily and will be put in service about Nov. 1 of this year. The new unit will be 23,000 hp. and will bring the capacity of this plant to a total of 84,662 hp.

Water will be supplied to the turbine through a penstock decreasing in diameter from 7 ft. at the top to 6 ft. at the power house. The penstock will be 2,300 ft. long and will extend from the end of the present pressure tunnel to the power house. The operating head at the plant is 440 ft. To house the generator and turbine, an addition to the power house was necessary.

The cost of the construction, which is being carried on under the supervision of W. D. Shannon, general superintendent, Stone & Webster Company, Seattle, will run to about \$1,200,000.

Rules for Off-Season Fan Sale Contest Are Announced

For the purpose of stimulating the use of electric fans throughout the year, The Society for Electrical Development has offered \$250 in prizes for the best plans on how to sell electric fans for any off-season use. The contest is open to all dealers in fans and their salesmen, beginning Sept. 1, and closing Oct. 15, 1924.

The first prize in the contest will be \$100, second prize \$50, and third to twelfth prizes will be \$10 each. In case of ties the full amount of the prize tied for will be awarded to each tying contestant.

Rules for the contest are as follows:

1. Select any one of the uses of the fan listed below or any other off-season use and tell how you would plan a campaign to sell fans for that use. Be brief but make your plan sufficiently inclusive so that other dealers may put it to work.
2. Contestants should suggest 3 additional off-season uses for fans.
3. Contestants should accompany plans with a photograph of a window display showing off-season use of fans of any make or showing

fans displayed in connection with other commodities.

4. All plans will become the property of The Society for Electrical Development and will be put to such use as it may wish to make of them for the benefit of the industry.
5. Contest begins Sept. 1. Contest closes Oct. 15, 1924.
6. Judges: Messrs. E. W. Austin (Toronto, Canada), S. W. Bishop (Denver), C. L. Chamberlin (San Francisco), J. W. Collins (Chicago), and J. E. North (Cleveland) have kindly consented to act as judges.
7. Prize winners will be announced in the December issue of this publication.
8. Prizes will be awarded on the basis of practicability, completeness, inspirational value of the plans and originality of ideas.
9. Sales plans and photographs should be sent to The Society for Electrical Development, 522 Fifth Avenue, New York City, attention of R. G. Zindle, Supervisor, Electric Fan Promotion.

Election on Hetch Hetchy Bonds to Be Held Oct. 7.—The San Francisco Board of Supervisors has passed an ordinance calling for a special election on Oct. 7, at which the voters of San Francisco will be requested to sanction the issuing of \$10,000,000 in bonds to carry on the construction of the Hetch Hetchy water system of the city. The money raised by this issue will be used to continue work on the viaducts, tunnels and pipelines of the upper or Sierra Nevada unit and also in the lower or Coast Range unit. The new bond issue has no connection with the proposal for the developing of hydroelectric power of Hetch Hetchy and it is understood that no action will be taken in this matter until the California Railroad Commission presents its evaluation of the San Francisco electrical systems of the Pacific Gas and Electric Company and the Great Western Power Company.

Switches for Hetch Hetchy Line Ordered.—The Pacific Electric Manufacturing Company, San Francisco, high tension switch manufacturer, has been awarded the contract for furnishing the city of San Francisco with air break switches for the Hetch Hetchy transmission line. The contract calls for ten three-pole, 160,000-volt air switches for tower mounting use.

Hubbard & Company to Build New Factory For Coast Trade

To better supply the Western trade with its line Hubbard & Company, of Pittsburgh, Pa., and Chicago, Ill., manufacturer of pole line hardware, has announced that it will erect a plant in Emeryville, Calif. The company has purchased a site on Forty-fifth Street, Emeryville, and will soon begin construction of the first unit of the Pacific Coast plant. It is expected that this plant will be completed and in operation by Oct. 15, 1924.

Hubbard & Company now have eleven manufacturing plants throughout the country and, in addition to pole line hardware, the company also makes an extensive line of bolts, nuts, shovels, spades, screws and a complete line of railroad track tools.

R. M. Kerschner, formerly sales manager of the electrical department, has been made Pacific Coast manager and has already taken up his new duties. The electrical lines of the company are sold on the Pacific Coast entirely through the Western Electric Company and the Pacific States Electric Company.

Two Hundred and Twenty Thousand-Volt Transmission Line to Be Extended.

—The Pacific Gas and Electric Company has approved the expenditure of \$973,400 for the construction and extension of its 220,000-volt transmission line from Vaca-Dixon substation to the site of the new Contra Costa substation in the vicinity of Antioch, Calif. The new line will be 29.1 miles in length and will be of single circuit construction except where crossing is made over the Sacramento and San Joaquin Rivers. The line will be operated at 110,000 volts until the Pit 3 development is brought in or until there is necessity for the full capacity of the line.

City to Use Floating Power Plant for Dredging.—The Grays Harbor Port Commission at Aberdeen, Wash., has authorized the purchase of a power unit to operate the Grays Harbor channel dredge. A Diesel generator set will be mounted on a barge, accompanying the dredge up and down the river.

Books and Bulletins

Factory Lighting Booklet Published.—A 24-page consumer booklet, entitled "Better Factory Lighting Pays," for mailing to executives and managers of industrial plants, has been published recently by The Society for Electrical Development. It is well illustrated and takes up every phase of the value of better lighting in factories and industrial plants and shows by graphic illustrations the benefits obtained by improved illumination. There are several testimonies as to what improved lighting has done in various kinds of industries, among which are letters from Harry S. New, Postmaster General, W. O. Critchfield, factory manager of The Shelby Salesbook Company, Sanford L. Cluet of Cluet, Peabody & Company, and other men of equal prominence in their own field of activity.

Meetings

Los Angeles Men Told of Plans For Lighting Campaign

The plans for stimulating interest in better home lighting, through the national home lighting essay contest, were explained to a group of Los Angeles, Calif., electrical men at a luncheon held in that city on Aug. 8. J. M. Hickerson, advertising manager of the Ivanhoe Division of the Miller Company, who is representing the Lighting Educational Committee, was the speaker at the meeting.

Mr. Hickerson presented the outlines and plans of the associations sponsoring the movement, and his address was

COMING EVENTS

Conference of Representatives of Electrical Leagues—

Camp Cooperation IV, Association Island, Henderson Harbor, N. Y.
Sept. 2-6, 1924

Rocky Mountain Division, N.E.L.A.—

Annual Convention—Glenwood Springs, Colo.
Sept. 15-17, 1924

Colorado Public Service Association—

Annual Convention—Glenwood Springs, Colo.
Sept. 15-17, 1924

California State Association of Electrical Contractors and Dealers—

Annual Convention—Santa Cruz, Calif.
Sept. 19-21, 1924

Pacific Division, Electrical Supply Jobbers' Association—

Quarterly Meeting—Del Monte Lodge, Pebble Beach, Calif.
Sept. 25-27, 1924

Association of Electragists, International—

Annual Convention—West Baden Springs, Ind.
Sept. 29-Oct. 4, 1924

American Institute of Electrical Engineers—

Pacific Coast Convention—Pasadena, Calif.
Oct. 13-18, 1924

Illuminating Engineering Society—

Annual Convention—Briarcliff Lodge, Briarcliff Manor, N. Y.
Oct. 27-31, 1924

Commercial National Section, National Electric Light Association—

Hotel Rafael, San Rafael, Calif.
Nov. 19-21, 1924

enthusiastically received by the Los Angeles men of the industry, who pledged their support. Among the men present at the meeting were the following: Richard E. Smith, advertising manager of the Southern California Edison Company, who presided as chairman of the meeting; F. E. Seaver, president of the Electric Club; H. L. Harper, manager, and A. B. Vandercook, sales manager, Western Electric Company; C. B. Hall, president, and H. E. Sherman, Jr., vice-president and sales manager, Illinois Electric Company; F. J. Airey, manager, and H. F. Rea, sales manager, Pacific States Electric Company; W. W. Graham, president, and H. W. Allen, sales manager, Graham-Reynolds Electric Company; J. L. Kline, president, Western Light & Fixture Company; Percy H. Booth, Pacific Coast sales manager, Edison Electrical Appliance

Company; K. E. Van Kuran, district manager, J. H. Jamison, manager merchandising division, J. C. Jones, manager central station division, and J. H. Fenton, manager industrial division, Westinghouse Electric & Manufacturing Company; S. E. Gates, district manager, Arthur L. Spring, merchandising specialist, General Electric Company; E. P. Markee, manager Edison Lamp Works of the General Electric Company; L. W. Davis, manager Westinghouse Lamp Company; H. S. Detrick, manager Baker-Joslyn Company; Frank Weiss, manager new business department, Los Angeles Gas & Electric Corporation; and Frank N. Smith, field representative, California Electrical Cooperative Campaign, who arranged the meeting.

San Diego Contractors Told of California Safety Code

George E. Kimball, electrical engineer for the California State Industrial Accident Commission, addressed a weekly meeting of the San Diego (Calif.) Electrical Exchange recently. At that time Mr. Kimball gave the contractors who compose the organization a history of the commission's work in organizing a state-wide code of safety orders, governing the installation of all electrical apparatus in such manner as to eliminate all hazardous conditions.

Mr. Kimball called upon the organization to cooperate with his office in the enforcement of the new safety orders, which, he declared, would be issued in printed form in the near future. He also answered a number of questions at the conclusion of his talk, defining and explaining the commission's interpretation of some of the orders in force.

S. A. Radelfinger and Grover A. Anderson, of San Francisco contracting and supply houses, also talked to the meeting, giving some idea of general trade conditions in the San Francisco Bay district.

Employees Entertained at Banquet.—

K. E. Van Kuran, Los Angeles district manager, Westinghouse Electric & Manufacturing Company, and C. B. Hall, president, Illinois Electric Company, were hosts to their male employees at a joint banquet and entertainment in honor of their baseball teams, on the evening of July 8. After the banquet, the employees, numbering about one hundred, attended the boxing contest in the Hollywood Legion stadium, in a body. Special guests of the evening were A. B. Day, vice-president and general manager, Los Angeles Gas & Electric Corporation; W. L. Frost, manager consumers' department, Southern California Edison Company; and Arthur A. Brown, manager syndicate division, Westinghouse Electric & Manufacturing Company, of New York.

P.C.E.A. Sections to Hold Meetings.—

The Technical Section of the Pacific Coast Electrical Association will hold a meeting in the committee rooms of the Southern California Edison Building in Los Angeles, Calif., Sept. 18-20. Meetings of the executive committee of the Commercial Section of the association are to be held in Los Angeles, Oct. 17-18, and in San Francisco, Nov. 19-21. The Commercial National Section of the National Electric Light Association will meet at the Hotel Rafael, San Rafael, Nov. 19-21.

Tenth District Home Lighting Plans Are Announced

To insure more complete preparation of the plans for the national home lighting campaign in the tenth district, which includes Colorado, Wyoming and New Mexico, Clare N. Stannard, director and vice-president and general manager of the Public Service Company of Colorado, has increased the personnel of his regional committee and plans are now being made for the establishment of working committees in each of the three states. A meeting of the enlarged committee was held in Denver, Colo., Aug. 14 to perfect organization plans and to arrange development of the various activities to be sponsored by the local communities where the contest is to be staged.

Charles A. Semrad, newly appointed commercial manager of the Public Service Company of Colorado, was designated as vice-chairman of the regional committee and state chairman for Colo-

COMING PACIFIC COAST ELECTRICAL ASSOCIATION MEETINGS

Technical Section—

Southern California Edison Building, Los Angeles, Calif.
Sept. 18-20, 1924

Executive Committee, Commercial Section—

Los Angeles, Calif.
Oct. 17-18, 1924

Executive Committee, Commercial Section—

San Francisco, Calif.
Nov. 19-21, 1924

rado. E. P. Bacon of the Natrona Power Company, Casper, Wyo., was appointed to head the work in that state and Arthur Prager, of the Albuquerque Gas & Electric Company in New Mexico, both to serve as members of the regional committee.

Other members of the regional directors committee are H. S. Sands, Westinghouse Electric & Manufacturing Company; H. D. Randall, General Electric Company; A. C. Cornell, Western Electric Company; John J. Cooper, Mountain Electric Company; W. A. J. Guscott, electragist and president of the Denver Contractors' Association; R. G. Gentry, G. W. Faller, G. B. Buck, and John Loiseau, Public Service Company of Colorado, with George E. Lewis, of the Rocky Mountain Committee, and S. W. Bishop of the Denver Electrical Cooperative League, as treasurer and secretary, respectively, of the regional committee.

San Francisco Contractors Name Earl Browne as Manager

E. Earl Browne, senior member of the firm of Browne-Langlais Electrical Construction Company, San Francisco, Calif., and for some time a contributor to the Journal of Electricity, has been elected general manager of the Electrical Contractors' and Dealers' Association of San Francisco. Mr. Browne has severed his interest in the contracting firm and will devote his entire time to the interests of the association.

The offices of the association have been moved to larger quarters at 522-524 New Call Building, San Francisco.

California State Association Annual Convention

Meeting to Be Held at Santa Cruz Sept. 19-21 Will Be Attended
by Members From All Parts of the State

The annual convention of the California State Association of Electrical Contractors and Dealers will be held at the Casa del Rey Hotel, Santa Cruz, Calif., on Sept. 19-21, 1924. As this is the only convention of the year a large attendance is expected and early reservations indicate that all records along this line will easily be broken.

Walter F. Price, executive secretary of the association, has made special arrangements for the accommodation of members and their families in attendance at the convention and has also provided a program of more than usual interest. All members and guests will be obliged to register in order to attend the various meetings and the annual banquet and at the time of registration will be furnished with a registration badge. This badge will admit the wearer to the various functions and no one will be admitted to any meeting, sport contest or banquet without a badge. The registration fee is \$5 which also includes the cost of the annual banquet. All branches of the electrical industry are invited to be present. Hotel and convention reservations may be made only through the office of Walter F. Price, executive secretary of the association, at 318 Call Building, San Francisco, Calif. Registration will close on Sept. 17. However, to accommodate those who may be late in making res-

ervations, Mr. Price will receive applications at the Casa del Rey Hotel until Saturday, Sept. 20.

Hotel rates will be on the European plan, as follows:

1 person, room without bath.....	\$2.50
2 persons, " " " (Double bed).....	3.50
2 persons, " " " (twin beds).....	4.00
1 person, room with bath.....	3.50
2 persons, " " " (double bed).....	5.00
2 persons, " " " (twin beds).....	5.50

Cottages:

One-room cottage—1 person	\$1.25, 2 persons
\$2.00, 3 persons	\$2.50, 4 persons \$3.00.
Two-room cottage—2 persons	\$3.00, 3 or 4 persons \$4.00.

Meals:

Served in hotel dining room—breakfast	\$.75,
lunch	\$.75, dinner \$1.25, Sunday dinner
\$1.50.	(Pay as you enter.)

The convention program, including many sports events and also many plans for the entertainment of ladies and children, is as follows:

Friday, Sept. 19—Opening Day

8:00 a.m.—Golf tournament—for members and registered guests.
9 a.m.—Executive committee meeting.
2:00 p.m.—General open meeting—admission by registration badge.
8:30 p.m.—Convention ball (informal)—admission by registration badge.

Saturday, Sept. 20

9:00 a.m.—Baseball game (city ball grounds)—admission by registration badge. (Contractors vs. Jobbers and Manufacturers.)
6:30 p.m.—Convention banquet—admission by registration badge. (Informal dancing.)

Sunday, Sept. 21

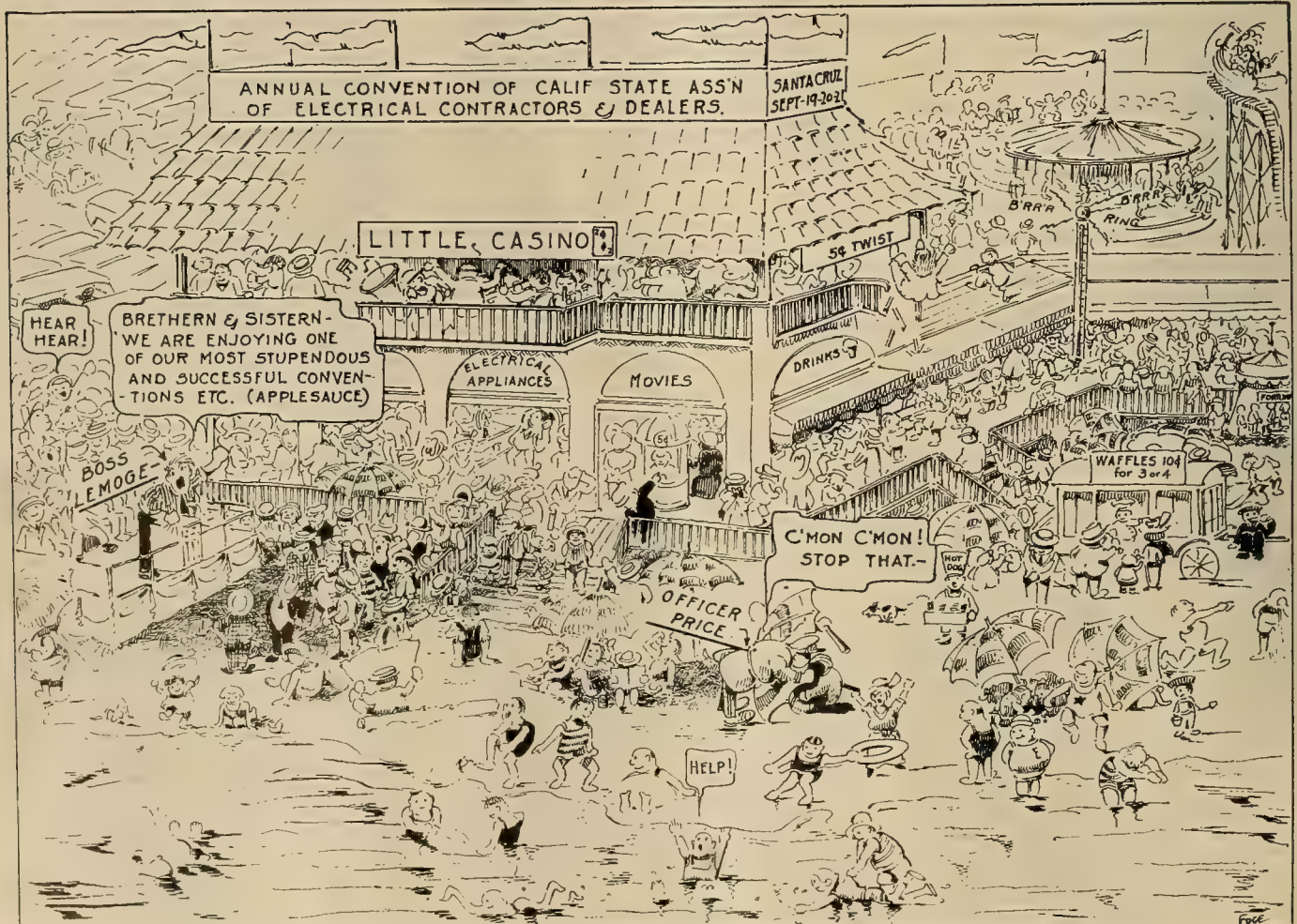
Golf, swimming and beach amusements. There will be special events for the ladies.

One of the main sports events of the convention will be the baseball game between the contractor-dealers and the jobbers and manufacturers. Special prizes have been obtained for the contest and the awards will be made at the close of the game. Trophies will also be offered for the winners of the golf contest. There will be a large number of entertainment events provided for the ladies attending the convention and these will include several games and other athletic events, for the winners of which there will be special prizes.

There will be several representatives of manufacturers and jobbers at the convention and an interesting program of short talks has been arranged, provision has also been made for discussion to follow the addresses. The subjects to be covered will include Estimating; Lighting and Lighting Fixtures; Residence Wiring; Radio; Credits, and other matters of interest to every electrical contractor-dealer.

Many sections of the association are planning to send delegations representing 100 per cent of their membership. Present indications are that this will be the most successful convention ever held by the association.

Transportation facilities to Santa Cruz are excellent and the trip may be made by Southern Pacific train, by automobile stage or by private cars over the state highway. This highway is in splendid condition all the way and, for those making the trip from San Francisco or from the Coast region, leads through Los Gatos and the beautiful hills in back of that section.



Cartoonist's version of California State Association of Electrical Contractors and Dealers' Convention, Sept. 19-21.

Manufacturer, Dealer and Jobber Activities

Walker & Pratt Manufacturing Company, Boston, Mass., has just brought out a new type of automatic control for its Crawford electric ranges. The device is operated by the expansion of two dissimilar metals and is said to be accurate within very close limits. It may be attached to future ranges made by the company and may also be used in connection with a time control recently adapted to this make of range. Either or both the time and temperature control may be attached to future models made by the company, even though ranges should be bought originally without the control.

The B & R Electrical Supply Company, Denver's newest electrical jobbing house, has been appointed distributors in the mountain region for the Line Materials Company of Milwaukee, Wis., and the Hold-Heet line of appliances made by the Russell Electric Company of Chicago.

The Westinghouse Electric & Manufacturing Company has revised its booklet on wiring tables and illumination data and has issued the third edition of this work. The book contains fifty-two pages and gives detailed instructions for accurately laying out the wiring for an industrial or commercial lighting system. Various types of luminaires are described and pictured and a table is given showing the present foot-candle standards most desirable for illumination.

G. A. Gramcko, proprietor of the Washington Park Electric Company in Denver, Colo., has established a new store and shop at Alameda and South Downing Street. Radio will be featured.

Savage Arms Corporation, Utica, N. Y., has recently published a booklet entitled "Keeping Out of Hot Water." The booklet is devoted to the Savage electric washer and dryer and is designed for distribution among consumers.

The Johnson Electric Manufacturing Company, Warren, R. I., has issued Bulletin No. 2, which is devoted to descriptions of the company's line of "Jemcolets," "Ex-O-Lets," "Johnson-lets," and non-separable ground clamps. Price lists are also presented in the bulletin.

F. E. Newbery Electric Company of California has moved its San Francisco offices to 1160 Bryant Street.

The Albert Sechrist Company, manufacturers of lighting fixtures and pressure cookers, has closed its retail store at 17th and Tremont Streets in Denver, Colo., in order to concentrate all activities at the factory, 1717 Logan Street, under the new management of K. L. Francis. The largest and most completely appointed fixture display rooms in the mountain region have been established at the new location.

General Electric Company has published indices to its descriptive publications known as Y-1991, Y-1992 and Y-1993. The indices present a listing of all company bulletins together with the numbers of each.

Henger-Seltzer Company, Los Angeles, Calif., is acting as manufacturers' representative for the following concerns: Crescent Insulated Wire & Cable Company, Trenton, N. J.; Bonnell Electric Manufacturing Company, New York City; Saylor Electric & Manufacturing Company, Detroit, Mich.; Aurora Steel Products Company, Aurora, Ill.; The Yaxley Manufacturing Company, Chicago. The company is arranging to open offices in San Francisco and Seattle.

Baker-Joslyn Company has been appointed Pacific Coast agents for the Hykon boring device, made by the Hykon Manufacturing Company, Alliance, Ohio.

The Poindexter Supply Company will move from its present location at 1440 Stout Street, Denver, Colo., to the location of the New England Electric Company, 1951 Lawrence Street, where one floor of the latter company's building has been leased.

Edison Electric Appliance Company, Inc., Chicago, Ill., has recently published a supplement to its 1924 catalog giving the Hotpoint appliances developed by the company during 1924. The supplement contains description of a duplex grill, waffle iron, toaster, table stove, sugar and creamer, Hedlite heater, electric cooker, a marcel iron and a curling iron.

The Industrial Electric Company of Salt Lake City, Utah, has recently opened a branch at 1215 Santa Fe Avenue, Los Angeles, Calif. The company is conducting a general sales and electric repair business and specializes in industrial electric motors and generators. H. L. Thomas is manager of the company.

The Laguna Electric Company, of which C. R. Siglin is proprietor, has moved into its new and enlarged quarters on the Coast Boulevard at Laguna Beach, Calif.

Roller-Smith Company, New York City, has published Bulletin No. 110 and Bulletin No. 150, superseding respectively the issue dated March, 1921, and supplement to Bulletin No. 110 dated January 21, 1924; and issue dated October, 1920. Bulletin No. 110 contains descriptive matter concerning type HD d.c. small portable ammeters, milli-ammeters, voltmeters, milli-voltmeters and volt-ammeters. Bulletin 150 is devoted to the company's line of a.c. portable instruments known as type HA.

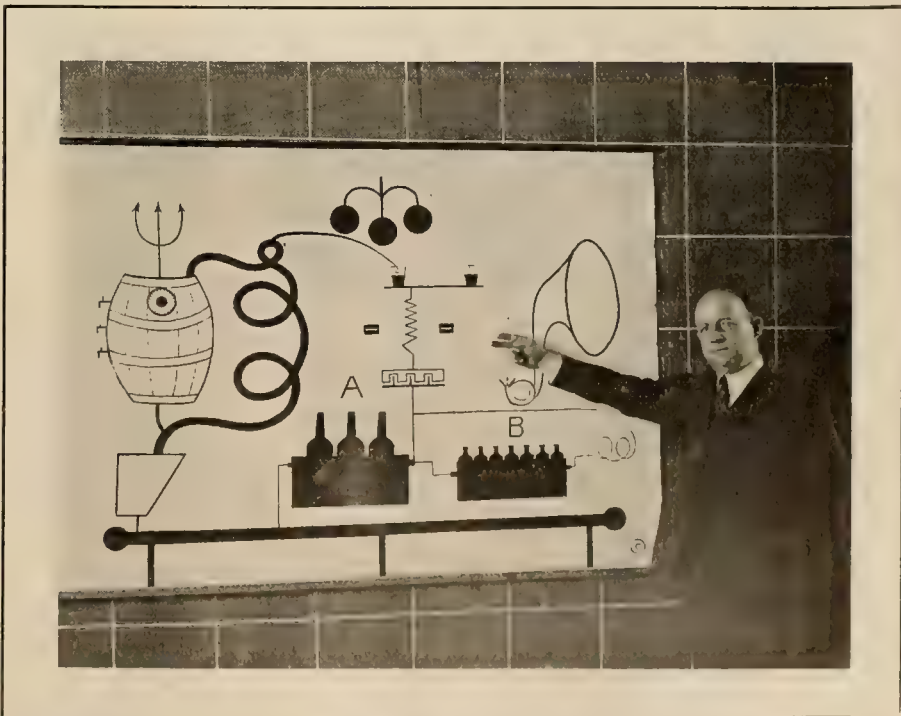
Ward Leonard Electric Company, Mt. Vernon, N. Y., has published Bulletin No. 62 which shows the adaptation of Controlite to theater lighting. The bulletin describes the control apparatus and presents descriptions and illustrations of various types of control boards.

The Apex Electrical Distributing Company has established a warehouse in Denver, Colo., under the direction of H. P. Whitten, who was recently appointed division manager in charge of the Mountain section.

Great Western Radio Corporation, San Francisco, has moved to its new building at 1118 Harrison Street in that city. The company, which manufactures Radyne radio equipment, now has its factory and offices in the same building.

The American Engineering Company of Philadelphia, Pa., has recently announced the appointment of three Western representatives for the sale of its line of Lo-Hed monorail electric hoists. The new representatives are: C. F. Bullotti Machinery Company, San Francisco; Fulton Engineering Company, San Francisco, and P. E. Wright Engineering Company, Seattle.

Square D Company, Detroit, Mich., has recently appointed J. J. Mitchell as district sales manager in the St. Louis district, with headquarters located at St. Louis, Mo.



Harry Sessions of the Southern California Edison Company with the wiring diagram of his "Stuporputrodyne" radio hookup, which he uses to explain "The A, B, C of Radio." Mr. Sessions recommends that the set be installed in the cellar. As the hookup has been patented and copyrighted by him, we recommend that interested readers get in touch with Mr. Sessions before trying to build a set of their own.

Personals

Ben S. Read, for the last five years president of the Mountain States Telephone & Telegraph Company with headquarters in Denver, and for the last year president of the Colorado Public Service Association, has been elected president of the Southern Bell and the



BEN S. READ

Cumberland Telephone & Telegraph companies with general headquarters in Atlanta, Ga. Succeeding him as president of the Mountain States company is Frederick H. Reid, former vice-president of the two southern companies. Mr. Read entered the employ of the telephone organization at the age of 16. In addition to his work with the telephone company in Denver, Mr. Read was active in civic and social affairs. In the business world he is director of the United States National Bank at Denver, a director of the Denver Tourist Bureau and a member of the Rocky Mountain Committee on Public Utility Information in addition to the Public Service Association of Colorado. Territory embraced by the Southern Bell and Cumberland Telephone & Telegraph companies includes Georgia, North Carolina, South Carolina, Alabama, Florida, Tennessee, Louisiana and the Mississippi district.

E. P. McSpadden, of Amarillo, Texas, has been placed in charge of all window and floor displays of the Public Service Company of Colorado, Denver, Colo.

Harold M. Schwab, president of Harold M. Schwab, Inc., New York City, attended the radio exposition recently held in San Francisco, Calif.

Nate Hast, of the Shamrock Manufacturing Company, Newark, N. J., was recently in San Francisco, Calif., to attend the radio exposition held there by the Pacific Radio Trade Association.

C. S. Vance, vice-president of the Los Angeles Gas & Electric Corporation, Los Angeles, Calif., recently left for an extended trip to Portland, Ore., Seattle, Wash., and other Northwestern points.

L. A. Hobbs, of the Edwin F. Guth Company, St. Louis, Mo., has just completed a trip to San Francisco, Calif., on business for the company.

Hugh M. Crawford, sales manager of the Pacific Gas and Electric Company, San Francisco, Calif., attended the meeting of the Commercial National Section of the National Electric Light Association held at Chicago, Ill., during the month of August.

A. Alldman, of Northeastern Radio, Inc., Boston, Mass., was recently in San Francisco, Calif., to attend the radio exposition held Aug. 16-21.

W. R. Alberger, general manager of the Key System Transit Company, Oakland, Calif., has left for an extended trip to Eastern cities. Mr. Alberger went East via the Panama Canal and will return by rail.

George H. Garry, recently associated with S. S. Cowan in the Hollywood Electric Shop, Hollywood, Calif., has sold his interest in the business to Mr. Cowan and will engage in real estate. Mr. Cowan will continue the business and intends to expand considerably.

Herbert Elder, of the Valley Electrical Company, St. Louis, Mo., was recently in San Francisco, Calif., on business for his company. A branch office of the company was opened in the Rialto Building, San Francisco, some months ago under the charge of W. Veit.

E. D. Stewart, manager of the El Paso, Texas, office of the Westinghouse Electric & Manufacturing Company, recently spent several days in Los Angeles, Calif. While there he attended a meeting of the department heads of the company.

George T. Bragg, a former employee of the Pacific Power & Light Company, Portland, Ore., before finishing his university course at the University of Washington, Seattle, Wash., recently graduated and returned to the employ of the Pacific Power & Light Company in the operating department at Portland. Mr. Bragg was associated with the Packard Motor Car Company of Seattle during his attendance at the university.

H. W. Crozier, representative from the San Francisco office of Sanderson & Porter, consulting engineers of New York City, Chicago, Ill., and San Francisco, Calif., has recently returned from Aberdeen, Wash., where he has been investigating the possibilities of electric logging in that vicinity for the Gray's Harbor Railway & Light Company of that city.

W. H. Hymes, Northwest sales manager, M. Wright, lumber industries expert, and **A. W. Trabor**, sales manager of the General Electric Company, Seattle, Wash., recently visited Aberdeen, Wash., to investigate the electrical logging possibilities for the Gray's Harbor Railway & Light Company of that city.

F. J. McEniry, for some time field representative of the Denver Electrical Cooperative League, has been appointed director of the news bureau of the General Electric Company's Denver radio broadcasting station.

W. A. Macy, formerly assistant chief clerk in the Dinuba, Calif., office of the San Joaquin Light & Power Corporation, has been made chief clerk in the Coalinga office of the Midland Counties Public Service Corporation.

Harold Brandin, formerly chief clerk in the Coalinga, Calif., office of the Midland Counties Public Service Corporation, has been made traveling auditor of the San Joaquin Light & Power Corporation.

C. P. Soderberg and **Roy Beirdneau**, of the Illinois Electric Company, Los Angeles, Calif., won the recent sales contest of the National Lamp Works, leading the entire United States in the volume of new business secured during the contest. The prize awarded to these two men was a trip for each to the annual convention of the National Lamp Works at Nela Park, Cleveland, Ohio.

Victor W. Hartley, executive secretary of the California Electrical Co-operative Campaign, recently spent several days in and around Sacramento in the interest of the Better Home Lighting Campaign. He also spent some time in Stockton.

Franklin T. Griffith, president of the National Electric Light Association, has been appointed one of seven national judges in the Better Lighting contest.

J. H. Knost, Jr., manager of the Arizona district office of the Westinghouse Electric & Manufacturing Company, attended a meeting of district managers held at Los Angeles, Calif., Aug. 11-13.

P. W. Jones, western representative of the R. D. Nuttall Company, with headquarters in Salt Lake City, Utah, recently spent several days in Los Angeles, Calif., going over the territory with local representatives.

Harry D. Havey has been appointed sales manager of the Electric Appliance Company, San Francisco, Calif., succeeding Grover Andersen, resigned. Mr. Havey has been with the Electric Appliance Company for over thirteen years and has for the past several years been covering the Nevada territory. Mr. Havey was born in Oroville, Calif., and began his electrical experience with the Oroville Water, Light & Power Company. He worked on construction for one year and then entered the offices of the company where he remained for about three years, the latter part of which he acted as purchasing agent. About 1908 he moved to San



HARRY D. HAVEY

Francisco and joined the staff of the Levy Electric Company in charge of stock and purchasing. Some time later he became affiliated with the Electric Appliance Company and was soon given the northern California and Nevada territory. As business increased Mr. Havey found it advisable to confine his attention solely to Nevada. He comes to his new work well equipped with experience and knowledge of the electrical industry.

S. H. Taylor, secretary of the Pacific Coast Electrical Association, San Francisco, Calif., has left to attend Camp Cooperation IV held at Association Island, N. Y. Following this meeting Mr. Taylor will attend the meeting of the executive committee of the National Electric Light Association at Chicago, Ill., and will also visit his former home at Northampton, Mass.

W. C. Sterne, of the Summit County Power Company, Denver, Colo., was recently in San Francisco, Calif.

Allen H. Babcock, electrical engineer for the Southern Pacific Company, San Francisco, Calif., addressed the members of the San Francisco Electrical Development League on the subject of Mexico at that organization's weekly meeting held Aug. 25. Mr. Babcock recently returned from Mexico where he acted as the representative of the United States Government at the conference of the Inter-American Committee on Electrical Communications, held at Mexico City May 27 to July 22. While there he was made an honorary member of the Mexican Geographical Society.

Thomas W. Nixon of Denver, Colo., has been appointed to succeed T. E. Fitzsimmons as representative of the Westinghouse Lamp Company in the Mountain territory.

Rufus G. Gentry, who has since 1922 been commercial manager of the Public Service Company of Colorado, Denver, Colo., has been made manager of the bureau of public relations. This is a new department of the company and Mr. Gentry, on account of his long experience in commercial matters, is well equipped to organize and direct the work. In November, 1900, Mr. Gentry joined the staff of the Denver Gas and Electric Light Company as representative, being promoted, two years later, to be assistant to Clare N. Stannard, who was at that time commercial manager. In April, 1922, when Mr. Stan-



RUFUS G. GENTRY

nard was made general manager of the company, Mr. Gentry was made commercial manager. During the quarter of a century that he has been connected with the commercial department it has grown from a total personnel of only seven to the present force of over one hundred members, in seven departmental divisions. In his new work Mr. Gentry will organize and direct one of the most important departments of the company.

Harry L. Mulligan, of the merchandising department of the General Electric Company, Bridgeport, Conn., has just completed a tour of the entire Pacific Coast. Mr. Mulligan has been investigating the use and distribution of conduit in this territory.

E. P. Markee, Los Angeles, Calif., manager of the Edison Lamp Works, recently returned from an extended trip to the East where he visited the factory at Harrison, N. J., as well as other points.

Laurence A. Nixon, managing editor of "The Radio Dealer," attended the radio exposition held by the Pacific Radio Trades Association in San Francisco, Calif., Aug. 16-21.

David C. Pence, manager of the lamp department of the Los Angeles, Calif., office of the Westinghouse Electric & Manufacturing Company, recently left for Nela Park, Cleveland, Ohio, to attend the annual meeting of the National Lamp Works.

C. P. Soderberg, **B. C. Bruce**, **Roy Beirdneau** and **William J. Hickey**, all of the Illinois Electric Company, Los Angeles, Calif., are attending the annual convention at the National Lamp Works, Nela Park, Cleveland, Ohio.

Guy W. Talbot, president, **Lewis A. McArthur**, vice-president and general manager, and **J. H. Siegfried**, superintendent of power, of the Pacific Power & Light Company, Portland, Ore., recently returned from an inspection trip of the company's properties in Washington. They report a general improvement in conditions throughout the state.

E. N. Sanderson, president of the Federal Light & Traction Company, New York City, has been spending several days at Aberdeen, Wash., attending to matters of importance in the Gray's Harbor Railway & Light Company, of which he is also president.

C. E. Magnusson, dean of the College of Engineering, University of Washington, Seattle, Wash., has been appointed chairman of the Student Branches Committee of the American Institute of Electrical Engineers.

Howard Finch has been made assistant chief clerk of the San Joaquin Light & Power Company, Dinuba, Calif.

R. M. Kerschner, former sales manager of the electrical department of Hubbard & Company, Pittsburgh, Pa., and Chicago, Ill., has been made Pacific Coast manager for the company.

C. A. Winder, for several years manager of the Southwest district of the General Electric Company, El Paso, Texas, has resigned from that company to become manager of the electrical department of the Southern Equipment Company at San Antonio.

Paul H. Affolter, of Garland-Affolter Engineering Company, San Francisco and Los Angeles, Calif., has left for an extensive trip to the East. Among other cities Mr. Affolter will visit St. Louis, Mo., Milwaukee, Wis., Warren, Ohio, Howell, Mich., Buffalo, N. Y., and Kenova, W. Va., in the interests of the manufacturers represented by his firm.

Charles T. Phillips, electrical engineer of San Francisco, Calif., has been appointed consulting engineer for the \$40,000,000 school building program of the city of Los Angeles.

J. P. Bowden, of the Edison Electric Appliance Company of Los Angeles, Calif., recently spent some time in San Francisco on business for his company.

Charles A. Semrad, formerly vice-president and assistant general manager of the Public Service Company of Colorado with headquarters at Boulder, has been made commercial manager of that company. He succeeds R. G. Gentry, who has been placed in charge of the public relations department, the changes being due to the reorganization of the commercial department of the company consequent upon its recent merger with the Colorado Power Company. Mr. Semrad has been closely affiliated with the electrical industry for many years and has taken a prominent part in its activities. He was



CHARLES A. SEMRAD

graduated as an electrical engineer from the University of Wisconsin in 1908, and for a time was instructor in hydraulics and water power at that university. For a year he was in the employ of the Union Light & Power Company of St. Louis, Mo., and until 1914 was cadet engineer with the Northern Colorado Power Company. He served as general manager of the Cheyenne Light, Fuel & Power Company, a subsidiary of the Western Light & Power Company, from 1914 to 1918, when he was made general manager of the latter company. When that company was merged with the Denver Gas & Electric Light Company of Denver in October, 1923, to form the Public Service Company of Colorado, Mr. Semrad was appointed directing head of the Western division. He has recently been designated as vice-chairman of the regional committee in connection with the national Home Lighting Campaign and state chairman for Colorado. He has served as a member of the Rocky Mountain Division of the N.E.L.A. committee, was president of the Colorado Electric Light, Power & Railway Association, and at the last election of the Rotary Club of Boulder was elected president of that organization for the ensuing term.

W. M. Clare, former signal engineer of the United States Government, recently located at the Balloon School, Arcadia, Calif., has joined the Los Angeles office of the Western Electric Company. Mr. Clare will be a specialty salesman on high tension equipment, insulators, pole line hardware and interphones.

Clifford Prudhomme, electrical contractor of Sacramento, Calif., attended the Pacific Radio Exposition held in San Francisco, Aug. 16-21.

Trade Outlook

San Francisco

San Francisco and the bay cities and the territory contributory to them are showing improvement in business in general. The trend of prices is upward, which encourages optimism. The money received by farmers in settlement for crops is being turned into commercial channels, and this naturally acts as a stimulus. Conditions in the lumber industry have taken a turn for the better. Building continues at a good pace, and wholesalers, retailers and manufacturers report fairly good business, with collections somewhat slow.

In the electrical industry jobbers report somewhat larger and better assorted orders. Some improvement is noted in sales of insulating material such as fiber and mica. Insulating tape has been moving very well, and it has been found necessary to create a 1,000-lb. price, replacing the old 100-lb. maximum. Due to quite a long period of hand-to-mouth buying, much constructive sales effort is being put forth in staples such as cables, cords, electric household hardware, in water and air heaters and schedule material. The motor business is fair with stocks adequate, and keen competition is evident in the radiator line. The recent radio exposition was well attended, and results are already noticeable in the stimulation of retail trade. Announcement has been made that a plant for the manufacture of porcelain insulators is to be built in the San Francisco Bay district by a large Eastern firm.

Los Angeles

Business outlook in Los Angeles is favorable, with indications of continued improvement. Collections are better and money is easier. There is labor in abundance to meet the demands upon it.

The building industry for the first half of August is below the same period of last year, but is better than that for the corresponding period of last month and above the 1922 mark, while bank clearings are well above last year.

The electrical retail business showed signs of increase during the first two weeks of August and this is encouraging as, owing to the power shortage, the sale of appliances has decreased. However, radio sales are increasing and on the whole the outlook is far from discouraging. The jobbing situation is improving and shows signs of increase over the preceding month, while manufacturers continue to report good business prevailing in their lines, the latter being largely due to increased business in the sale of farm lighting sets and generating equipment. Retail business in lines other than electrical is good and this is especially true in department and clothing stores, which are closing out seasonable articles.

Denver

Electrical jobbers without exception report increased buying and a strengthening market during the past month. Appliance and radio sales are not up

to standard, but in several communities where special campaigns have been staged there has been no apparent lack of interest or buying ability. Very few failures in the ranks of the contractor-dealers have been reported recently, and the majority are continuing comfortably although wiring prices are ragged and unstable.

Conditions in this city and the entire state remain uniformly good and better by far than was anticipated a month or so ago. Thanks to gas and oil development in various parts of the state that has already proved itself in three new areas, business continues with an undercurrent of confidence and optimism.

Only one factor of a backward character has evidenced itself recently and that concerns unemployment of semi-skilled workers. There is an excess of office workers, but plenty of demand for unskilled labor, especially in the larger cities and rural regions. Building craftsmen are receiving good wages, with a record construction program under way.

Seattle

Continued improvement in the lumber market has been the feature of the business situation in Seattle recently. Sales for the first two weeks of the month were 28 per cent above production and, except in the matter of prices, the lumber market today is better than it was at this time last year. Lumber manufacturers are pursuing a conservative policy to avoid overproduction, but there is definite assurance that lumber is on the ascent. Prices on upper grades are firmer, but the main improvement in the industry is the better tone now noticeable and the feeling of optimism and renewed confidence that is everywhere evident.

Building construction continues active, although there has been a slight recession from the activity of early spring and summer.

Electrical jobbers report numerous inquiries from lumber mills and industrial plants for heavy motors and various smaller equipment, but orders have not materialized heavily from this source. Contractor-dealers have had active demand for schedule materials, house-wiring devices, etc. Demand for domestic appliances has dropped off somewhat during the past month. Prices, generally speaking, are firm and stocks are adequate.

Spokane

There is a noticeable increase in the construction of dwellings in Spokane, most of which are of the bungalow type selling for \$4,000 to \$7,500. Many of these are wired for electric ranges.

On Aug. 2 The Washington Water Power Company completed its second electric range campaign of the year with a total of 309 for the whole territory, of which 177 were sold in Spokane.

Stock yards receipts show great gains over the previous year and have increased 100 per cent during the past

five years. Today the demand exceeds the supply. The high price of wheat is expected to assure good profits in this territory, which will produce about 30,000,000 bushels, or about half of the 1923 crop.

Retail business is quiet, with improvement in prospect. In the lumber business logging is slow, but wood-working plants as a group are working at normal output, with a few plants reporting exceptionally good business.

The price of lead is holding up, and production continues at a high level. Dividends aggregating \$500,000 are expected to be declared at an early date by two of the leading silver-lead mining companies in the Coeur d'Alene district in northern Idaho.

Salt Lake City

Electric appliances are moving fairly well. Electrical interests are preparing to launch an extensive program in connection with the Better Home Lighting Contest, and good results are expected in this territory. Collections are fair and show improvement over the same period last year. Jobbers report a continuation of betterment of business.

With the high price of wheat and other farm products the outlook for the farmers is more encouraging, although crops in many sections will not be up to normal, due to the dry season.

The present strength of the metal market continues to stimulate mining activity in this section, and this important industry is flourishing. The conference of silver producers, held in Salt Lake City during the early part of August, was the most important business gathering that has assembled in this section for many years. As a result of this conference the organization of the American Silver Producers' Association was perfected, and the foundation laid for the securing of just recognition of one of the country's biggest enterprises—the mining, smelting, refining and marketing of silver.

Portland

The outstanding feature of the general business conditions during the past two weeks is the growing feeling of optimism that is being shown on every hand. The principal reliance is being placed in the increased purchasing power of the agriculturists, due to better prices for farm products and the revival of the lumber business. The arrival of the long looked for rain, breaking the longest dry period on record for Portland and vicinity, has greatly aided late crops, tended to increase hydroelectric generation, and somewhat relieved the water shortage.

In the lumber industry, a marked increase in demand has been noted. Several large mills, including the big plant of the Long-Bell Lumber Company, recently commenced operations, and old mills are increasing the number of shifts. Unsold stocks on hand in Oregon mills are low, and indications seem to point to a revival of the lumber business with strengthening prices.

Refrigerator space at ocean terminals and on ocean-going vessels is being equipped to handle a larger share of the apple crop than ever before. Building construction and large individual jobs continue to furnish employment to a large number of workers.

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Journal of Electricity

25 Cents a Copy

September 15, 1924

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American Machinist

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Electrical World

Electric Railway Journal

Engineering and Mining Journal-Press

Engineering News-Record

Bus Transportation

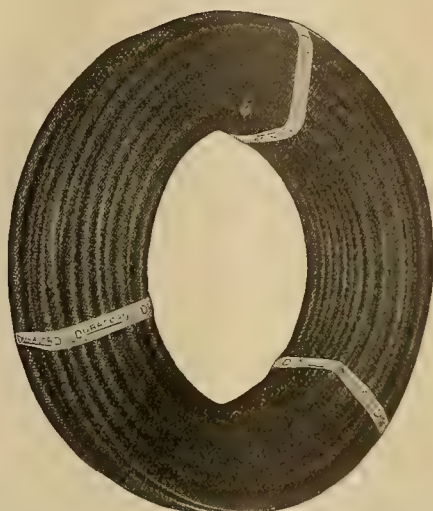
Electrical Merchandising

Power

It's a DURABILT Product

Reg. U. S. Pat. Off.

—*that means* **QUALITY**



DURACORD

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The pioneer of heavy-duty cords has proved its long life under extraordinary conditions of service.

Used in places where extra strength is needed, the heavy woven cover of DURACORD will give consistent service with little upkeep.

It's the special weave, every thread locked in place so that it can't loosen, chafe or fray, that puts the under-the-surface quality in DURACORD.

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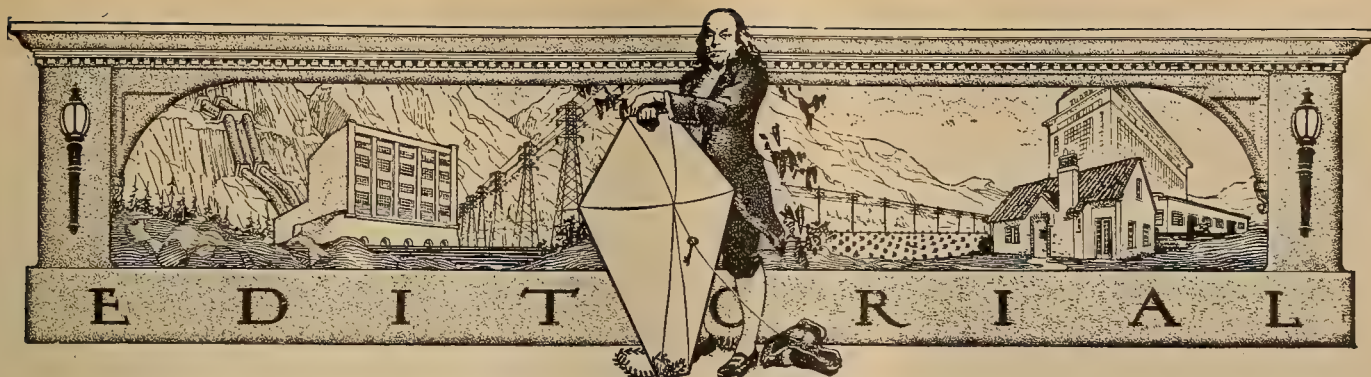
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Get Into the Game

A more constructive movement than the Better Home Lighting Campaign has never before been undertaken by the electrical industry. All branches are cooperating to make it a great success. The Lighting Educational Committee, headed by J. E. Davidson, vice-president of the National Electric Light Association, has arranged for financing the movement to the extent of \$500,000 for advertising, prizes and administration expense. Here in the West the regional directors, R. E. Fisher, San Francisco, A. C. McMicken, Portland, and Clare N. Stannard, Denver, are creating their organizations and assigning duties to the local committees in their respective geographic divisions. It only remains for the power companies, electric clubs or organizations best suited to the task to cooperate with the national effort through the local committees drafted for the work.

From the standpoint of the industry this campaign offers two main benefits. In the first place it should produce better public relations, because it is purely an educational movement; and secondly, it should stimulate intelligent selecting of fixtures and produce more satisfactory service from electrical energy. From a humanitarian standpoint its benefits are multifold, for it cannot help but better the eyesight of the nation. Many a person has been instructed in the candlepower-per-watt advantage of the type "C" lamp over the type "B," but few have progressed beyond the first lesson in cost per foot-candle. A great deal of badly designed glassware is yet in use, with the result that in many places the powerful rays of the type "C" lamp are not properly controlled, so that an increasing number of cases of eyestrain is recorded. The aim of the approaching campaign is to teach this second lesson in how to use to the best advantage the type "C" lamp as well as all other types of modern lamps.

In this instance the child instead of the fixture dealer is to be the teacher, and in what better way could the idea be brought to heads of families that purchase illumination? Do not your children tell you that the fire marshal says to clean up the basement, and otherwise surprise you with good common sense teachings brought home from school? And do you not pay more attention to this kind of teaching than you do to all the volume of instruction from the press or exhortation from the pulpit? So let us prepare to

harness the potential instructive energy of the millions of school children in the United States for the good of the industry and the health of the nation; and let us see to it that no community is disappointed after seeing the national advertising because no contest is to be carried on in their section. The West is said to have led the industry in many things. Let us not lag behind in this, the greatest movement of its kind ever attempted.

May we also reiterate the oft-repeated warning that this is an educational movement, not a commercial one, and that the contest must be kept on a highly ethical plane. We should be particular to prevent the lists of contestants from being used by unscrupulous dealers. The business side of the movement will take care of itself to the lasting benefit of all branches of the industry.

Oregon Becomes Inoculated

IF one rotten apple will spoil a barrel it is not to be expected that one good apple between two rotten ones could stay sound over a very long period. Oregon, long immune from the public-ownership bug although sandwiched in between California and Washington where this germ has been rampant for some time, has at last become inoculated. The disease is known as the "Oregon Water and Power Act," a constitutional amendment apparently patterned after the California Water and Power Act and the Erickson bill (proposed in Washington). The Act proposes to put the State of Oregon into the water, light and power business, giving it preferential rights over privately owned utilities.

The amendment was fostered by a local committee said to have been organized through the efforts of the Public Ownership League of America. The proposed measure represents sixteen months' work. It will be brought before the next session of the legislature with the request that it be placed before the people at the 1926 general election. If the state legislature refuses to do this or proposes to alter the Act, it will be withdrawn and placed on the ballot by initiative petition.

On another page of this issue some of the outstanding features of the proposal are discussed. Those familiar with the California Act or with the Erickson Bill will recognize some of the features of both in the Oregon measure. In some respects the

measure is even more vicious and more radical than either of the above.

It is a pity that Oregon must go through the same bitter experience of its two sister states. On the face of it, the announcement by the proponents of the bill seems a little hasty. They might at least have waited until the voters of California and Washington had voiced their disapproval of similar legislation as they are certain to do in November.

An Editorial for Electrical Contractors

AN analysis of wiring estimates has revealed that many jobs are being taken without profit, apparently in the hope that there will be "extras" or fixtures or appliances to be sold on which the contractor expects to obtain the return he did not get on the wiring. This process of reasoning is similar to that of a shoe dealer who sold shoes at cost expecting to make his profit on repairs at a later date. The situation, too, is the same—he did not get the repairs and the electrical contractor often does not get the extras. A banker does not loan money without assurance as to the return, not only of the principal but also of the interest he intends that money to earn. Why, then, should wiring jobs be taken for cost, or less? If it were sound business to use money without expectation of return, it is reasonably sure that bankers would follow that plan of action. However, banks have not been conducted along that line. Every loan must show a profit. Cannot the electrical contractor-dealer learn a lesson from the banker?

Cooperative Organizations Deserve the Support of the Industry

DENVER is collecting dividends from the money that has been invested in the Electrical Cooperative League of that city. So is the electrical industry. The third annual report of that organization, just published, shows that the League has been a decided success. Some of the definite accomplishments during the past year and the plans that have been outlined for the year to come are printed on another page of this issue. Aside from the facts regarding the contacts that have been made, the installations that have been supervised and improved, the campaigns the League has sponsored and the electric homes it has exhibited, were we to summarize the accomplishments of the League as set down in its report to the industry we would say that the organization has been responsible for

1. The creation of a feeling of mutual helpfulness in the industry and its allied interests.
2. The inculcation of a sincere and growing appreciation on the part of the public of what the electrical industry stands for.
3. A marked increase of interest in electrical matters on the part of architects, builders, realtors and the general public.
4. The spread of knowledge on the part of the

industry that it has successfully discharged its obligation to educate and serve the public.

The electrical leagues are becoming the service branches of the industry. Their ability to function and prosper depends upon the extent to which the industry supports them, both financially and morally. The cooperative plan is continuous and cumulative in the development of the industry and in the furtherance of its ability to serve the public. The extent to which the industry and the individuals in it benefit is of necessity measured by the degree in which they participate and contribute to that common cause.

Contractors and Dealers and Their Conventions

ATENTION has already been called to the annual convention of the California State Association of Electrical Contractors and Dealers to be held at Santa Cruz, Calif., Sept. 19-21. This meeting promises to be one of the most notable in its history on account of the exceptional character of the program which has been arranged. There has been a tendency in the past to treat these annual gatherings lightly, making them more of a jollification than a meeting ground for the exchange of information and ideas for the betterment of the industry in general and the contractor-dealer's place in that industry. This year specialists will address the gatherings on estimating, lighting and lighting fixtures, residence wiring, radio and credits. Men old in "the game" will relate their experiences for the benefit of the younger firms in the field. The program warrants the attendance of every contractor, dealer, manufacturer and jobber interested in this important branch of the industry. The association and its officers are to be congratulated on the forward step which has been taken in planning a convention of such a progressive nature.

Cooperation From Universities

A healthy condition, presaging the satisfactory solution of some of the problems confronting the electrical industry today, is noticed in the cooperative spirit of our state universities and colleges. There are two outstanding examples in the Northwest wherein institutions have taken a hand in the attempt to solve important problems, furnishing their organizations and the experience of their trained investigators for the task.

In Washington, the state university is taking the lead in bringing together the conflicting interests of the fishing and power industries, providing the common meeting ground for a sane consideration of the problem of taking salmon over high dams, and offering the services of Professor Cobb, the leading ichthyologist of the Northwest, to seek a solution of this problem. Experiments are under way, the results of which will have a distinct bearing on hydroelectric projects now planned but temporarily halted as well as others for future development.

In Oregon the State Agricultural College has completed the organization of the Oregon committee on the relation of electricity to agriculture, to co-operate with the N.E.L.A. movement, and has commenced a series of surveys of the farming districts of the state to determine to what extent such districts are electrified and what are the possibilities of their further electrification. The results of these surveys will be helpful both to the utility planning rural extensions and to the farmer demanding service, and will provide the basis of a more comprehensive understanding of the question by both parties. Professors McMillan and Gilmore have been released from university duties to carry on these surveys, and again we have evidence of the desire of President Kerr, with such associates as Professor Dearborn and Director Jardine, to attack the practical economic problems of the day.

This tendency in our institutions of higher learning is highly commendable. The old-school college professor, the type about which Harry Leon Wilson is writing so delightfully in the *Saturday Evening Post*—the type that lives in a purely academic atmosphere entirely surrounded by books—is rapidly passing out of the picture, and in his place we find the professor who is anxious to take part in the daily economic struggle of modern business. Such a professor must necessarily impart to the undergraduate much of the knowledge he absorbs through contact with the workaday world and a study of its problems, and thus we are assured that our own boys, and the young men we hire, will come out of college with a mental equipment in political economy beyond that to be gained solely from a study of our old friends (?) Adam Smith, John Stuart Mill, et al. What an admirable counter-irritant to the socialistic tendency that threatens the industry today! How well spent is the dollar paid in taxes for the support of our state universities and colleges!

Politics and

Power Systems

FROM a part of the country where certain elements of the people apparently have gone wild over government-owned power systems, comes another municipal project, a late development of which is treated in the news columns of this issue. We are not surprised at this, nor even grieved, since we feel, now that the project is halted at least temporarily, that reason eventually will prevail. Our reference is to the proposed project of the city of Aberdeen, Wash., on the Wynooche River.

Without accusing anyone of bad faith, and without attempting to present a brief for the Grays Harbor Railway & Light Company, we are constrained to comment on the case primarily because we are known to be against municipal ownership and operation as a principle. Because we believe in just emolument to capital, because we believe in the stimulus to growth produced by the hope of reasonable compensation to private initiative, and because our faith in private ownership is daily strengthened

through contact with the men that are running our utilities of the West, we continue to hope for sanity in government.

What does Aberdeen, a city of some 18,000 population, want with a \$2,000,000 power system? Why saddle itself with this debt, assuming the project could be completed for this amount—which seems doubtful—primarily to produce 34,000 hp. of energy in a community that now has a peak requirement of less than 5,000 kilowatts? We say “primarily” because, though the project includes a subsidiary water supply, it is pointed out by opponents of the scheme that for not more than \$250,000 the present water supply can be improved and conserved so as to take care adequately of the city’s requirements for many years. What, therefore, do the taxpayers, who have already taxed themselves for public improvements to the heroic extent of 100 mills, want with a seemingly over-developed power system? There is no apparent shortage of power in Aberdeen. The power company seems to be meeting all demands at reasonable rates, and is ready to develop additional hydroelectric power as soon as the need arises and as soon as a project is found that will deliver energy to the city at a cost comparable with the present cost of steam power generated from hogged-fuel. The thought cannot be driven home too often that waste lies not in allowing the water to run unmolested down hill, but in over-development of rivers with too costly projects.

In looking for the motive in these municipal power schemes, we are forced to assume that there is a political consideration involved. In the case in point, the belief is that Seattle and Tacoma regard Aberdeen as a possible third party to a tied-in system that will fill a job-creating function for the political quacks to play with. All of which reminds us of the indigent German who finally landed a government job as a “listener” for the man that tapped the journal-boxes of trains at stations on the government-owned railroads.

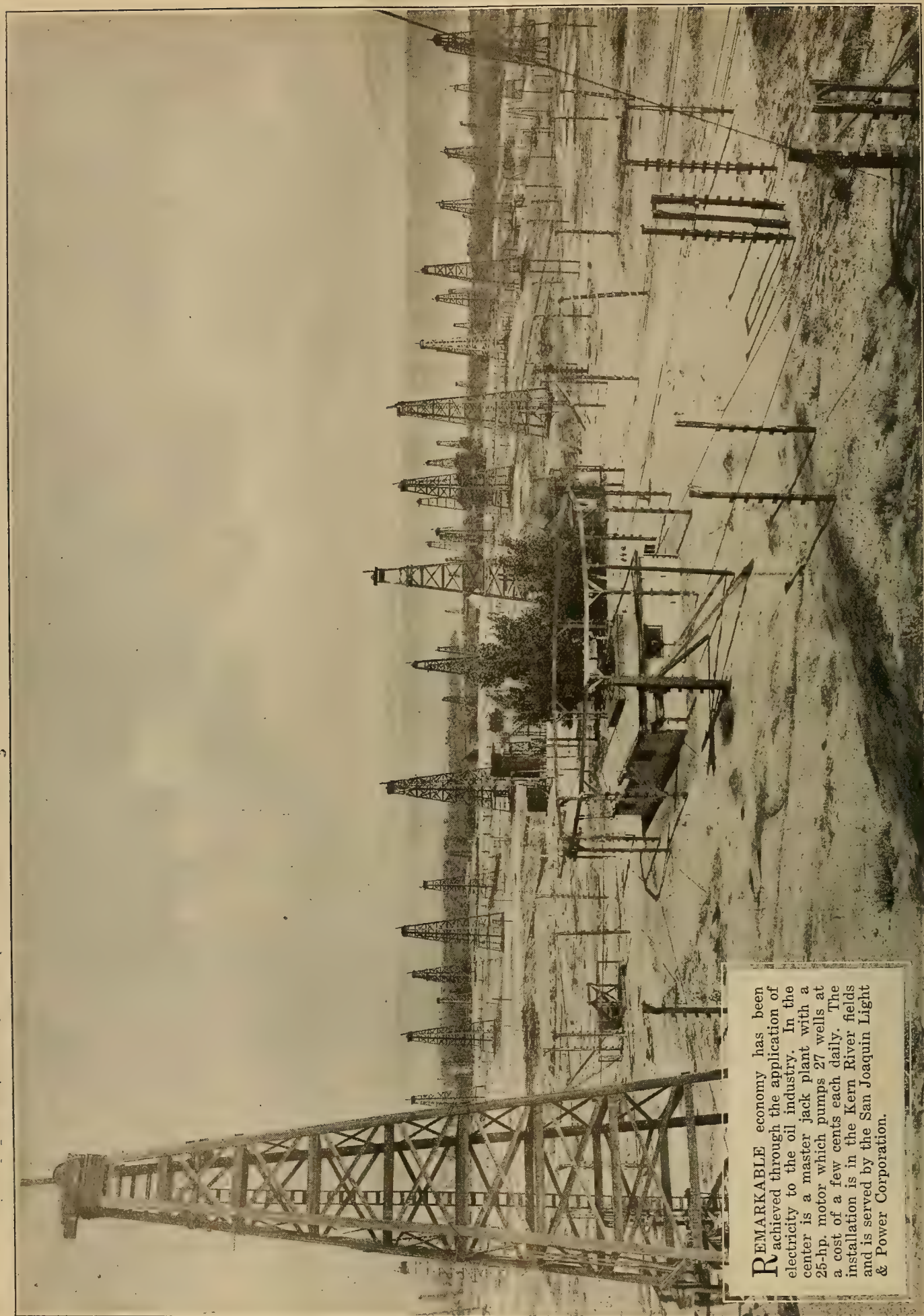
The Public

Be Pleased

IN the “good” old days of Cornelius Vanderbilt, before the Interstate Commerce Commission and state regulation came into being, the great public utilities ran things with a high hand. Starting with the “Big Boss,” himself, and from him down the line to the office boy, an insolent don’t care-a-hang bearing characterized their attitude toward the public.

As evidence of how far times have changed, consider the situation with a certain power company in Colorado, as told elsewhere in this issue. There was a vacancy in the position of general manager. Two communities, through their citizens, took up the cudgels in favor of the resident manager in each community in urging his appointment for the vacancy, and this without the slightest attempt at campaigning on the part of either candidate.

The public-be-pleased idea means something real in Colorado.



REMARKABLE economy has been achieved through the application of electricity to the oil industry. In the center is a master jack plant with a 25-hp. motor which pumps 27 wells at a cost of a few cents each daily. The installation is in the Kern River fields and is served by the San Joaquin Light & Power Corporation.

Electric Power in the Oil Fields

By H. N. Carroll

Sales Department, San Joaquin Light & Power Corporation,
Fresno, Calif.

THE electrification of California oil fields is not the result of clever sales propaganda or super-sales effort. The fact that the whine of the motor has, to a great extent, replaced the staccato exhaust of the gas engine is due to the proven efficient and economical operation of motors over other methods of drive. The motor has "sold itself" on its ability to perform all oil field operations of the engine drive and to perform them at a lower cost.

The first oil well motors used in the California fields were purchased by the Good Luck Oil Company of Coalinga in July, 1910. This installation was made only after a year's hard work by engineers, electrical salesmen and power salesmen, in perfecting a properly adapted motor to the degree where the manufacturing company felt safe in putting it on the market.

The oil field operators were naturally skeptical as to the ability of the motor to perform as the salesmen claimed it would. They wanted actual operating conditions and costs proved, and it was not until the summer of 1911 that any other contract of any consequence was signed.

The change from the old engine drive to motors has gone ahead very rapidly since 1911, however, in fields where electric power is available. This is especially true in the older fields where decreasing production has made economy of operation a deciding factor in the life of wells. There have been

RECENT development in the oil fields, notably the diminution of gas pressure and flow, has brought the application of electricity to the fore in drilling and pumping. A survey of the oil wells in the territory served by the San Joaquin Light & Power Corporation shows that the cost of electric power for pumping is considerably less than steam or gas engine drive, and that electricity has many advantages for drilling.

many cases where wells that could no longer be pumped at a profit by engine drive have been changed to motor drive and are still being pumped at a profit today.

While the most important use of electric power is in drilling and pumping wells, it is being extensively used to drive water pumps, gathering and line pumps, vacuum pumps, compressors and circulating pumps for gasoline plants. Also it

is being used for dehydrators, for arc welding equipment for pipe-line and tank construction, for motor drive for machine shops, and for general lighting.

A recent survey of the oil field business being served by the San Joaquin Light & Power Corporation shows that the operators, superintendents and men in these fields have been sold on the electrical idea on costs only. The days when it was necessary to talk convenience and safety, and touch lightly on the cost of operation, to make power sales have passed.

With the increased business in these fields and the resultant improvement in distribution service, there are very few cases where motor drive will not show a decided saving in the cost of operation over other methods of drive.

Motors were used at first only to pump oil wells, but upon conclusive ability of the motor to perform all oil field operations of the engine drive and to perform them at a lower cost, the entire industry is rapidly being motorized.

In this survey, it was found that there were no

Table I. Cost of Electric Pumping with Individual Motor Drive

No. Motors	Total Hp.	No. Wells	Average Depth Feet	Average Monthly Production Barrels	Average Monthly Kw-hr.	Average Monthly Bills	Kw-hr. per Well per Day	Kw-hr. per Barrel	Cost per Well per Day	Cost per Barrel
11	67	11	650	1,950	20,704	\$ 289.50	62.7	10.6	\$0.877	\$0.145
2	20	2	660	1,000	5,604	78.45	93.4	5.6	1.307	0.078
11	165	11	800	10,500	26,272	334.50	79.6	2.5	1.013	0.032
8	120	8	800	3,200	24,088	337.23	100.3	7.5	1.407	0.106
3	45	3	800	1,350	10,248	143.47	113.8	7.5	1.594	0.106
3	45	3	925	2,000	16,047	224.64	178.3	8.0	2.496	0.112
2	20	2	980	1,800	4,786	67.00	79.7	2.6	1.116	0.037
19	285	19	1,000	7,300	60,006	838.69	105.3	8.2	1.471	0.114
12	180	12	1,000	5,200	17,635	246.90	48.9	3.4	0.686	0.047
27	405	27	1,000	25,000	84,495	1,182.94	104.3	3.4	1.460	0.047
10	100	10	1,100	8,200	20,462	286.47	68.2	2.5	0.954	0.035
15	225	15	1,150	21,000	57,200	800.08	127.1	2.6	1.777	0.038
13	195	13	1,200	27,500	36,575	547.05	93.7	1.3	1.403	0.019
3	30	3	1,200	2,000	12,036	169.35	133.7	6.0	1.881	0.085
2	30	2	1,250	1,500	11,812	165.37	183.5	7.8	2.756	0.110
35	360	35	1,500	27,000	139,192	1,323.50	132.5	5.1	1.260	0.049
17	255	17	2,000	25,500	82,000	925.86	160.8	3.2	1.815	0.036
3	45	3	2,400	6,600	10,660	149.24	118.4	1.6	2.658	0.023
3	45	3	2,733	5,250	13,140	183.96	146.0	2.5	2.044	0.035
4	80	4	3,150	14,100	20,769	370.25	173.0	1.4	3.085	0.026
203	2,717	203	318,054	204,150	673,731	\$8,664.45	.....	.....	.....	.....
Averages.....	.....	.....	1,571	1,005	3,319	\$433.22	110.6	3.3	\$1.422	\$0.0424

installations where the current consumed was used for any one given oil field operation. In practically all cases the current supplied was being used for line pumps, machine shops, or drilling motors, as well as pumping wells, and it was impossible to get an average cost for pumping over the entire field. The 20 installations used in Table I were not selected in an effort to prove a case for motor drive, but for the reason that in these cases the current consumed was not used for any purpose other than pumping and lighting.

Table II shows power cost data on the operations of jack plants in the Midway fields. The data were obtained in the same manner, and also include lighting on the various leases.

Motors having been used longer for pumping purposes than any other form of operation, it is very

and with jack plants and as a result it was difficult to ascertain power costs on the two methods of operation for the entire field as the current was almost invariably metered through one meter.

	Equipment	Horsepower	Duty	No. of Wells	Cost per Well per Day
1	Gas Engine	50	Jack Plant	23	\$1.23
31	Motors	15-30	Individual Pumpers	31	1.59
26	Gas Engines	25	Individual Pumpers	26	2.42
	Steam	.....	Individual Pumpers	15	6.00

Two of the larger companies operating on the P-5 schedule showed the following power costs for pumping wells with individual motors.

Table II. Cost of Electric Pumping with Jack Plants in Midway Fields

No. Motors	Hp.	No. Wells	Depth Feet	Average Monthly Production Barrels	Average Monthly Kw-hr.	Average Monthly Bills	Kw-hr. per Well per Day	Kw-hr. per Barrel	Cost per Well per Day	Cost per Barrel
1	30	13	290	1,650	5,448	\$ 76.27	13.9	3.3	\$0.190	\$0.0462
1	40	26	600	8,950	23,352	325.53	29.9	2.6	0.417	0.0333
1	15	6	700	1,800	2,714	37.99	15.0	1.5	0.211	0.0211
1	90	26	700	12,600	17,339	248.35	22.2	1.3	0.364	0.0225
2	115	29	1,000	12,180	17,797	249.16	20.4	1.4	0.284	0.0204
1	30	5	1,100	4,200	7,216	101.02	48.1	1.7	0.673	0.0139
1	75	16	1,250	3,748	13,604	190.46	28.4	3.5	0.396	0.0508
1	40	10	1,357	1,000	10,934	153.10	36.4	10.9	0.310	0.1530
9	435	131	109,840	46,128	98,404	\$1,381.88	.....	.....	.....	.....
Averages.....			838	351	10,933	\$153.54	25.0	2.1	\$0.352	\$0.0299

easy to obtain authentic cost data for this method of drive. The following results of a test made by one of the largest producing companies in the Midway fields show some very interesting comparisons in the cost of pumping oil wells with three different methods of drive. This test was made over a period of eight months' time and included labor, repairs, fuel oil, hauling, etc., but did not include interest on the

The cost per kilowatt-hour in the case of these consumers is 9½ mills and the power cost per well per day of approximately \$1.32 makes an excellent showing for motor drive.

The data on power costs for jack plant operation in Table IV show remarkably low operation costs for this form of drive. These data were selected at random from a survey of the entire field to show as

Table III. Cost of Electric Pumping with Jack Plants in Kern River Field

No. Wells	Average Monthly Production Barrels	Monthly Kw-hr.	Monthly Bill	Kw-hr. Per Well per Day	Kw-hr. per Barrel	Cost per Well per Day	Cost per Barrel
67	30,000	284,200	\$2,642.60	142.4	9.5	\$1.314	\$0.088
207	142,823	856,832	8,197.20	137.9	5.9	1.320	0.056
274	172,823	1,141,032	10,839.80	.....	.....	.....	.....
Averages.....				138.8	6.6	\$1.318	\$0.062

investment or depreciation on equipment, which would tend to further increase the favorable showing made by the motors.

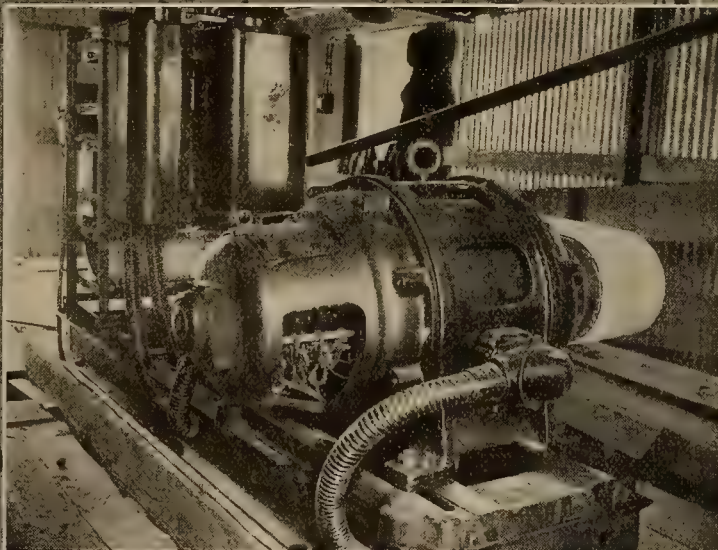
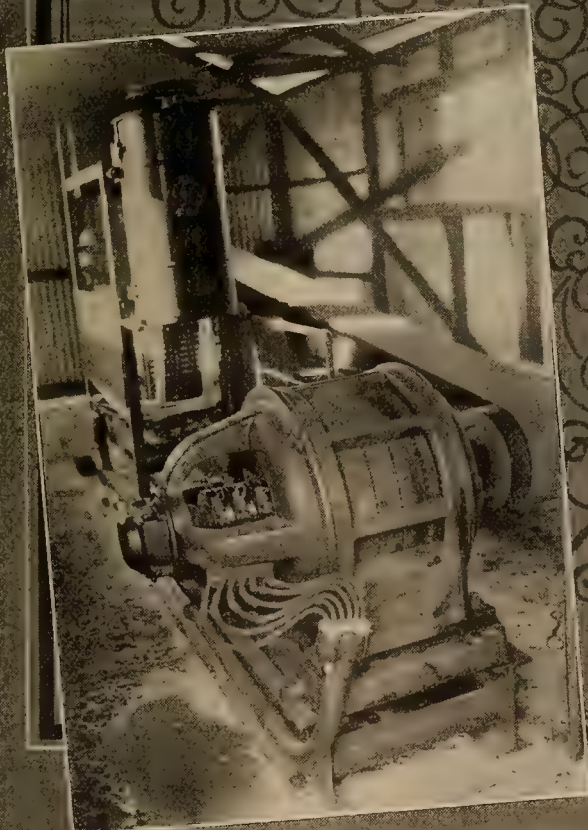
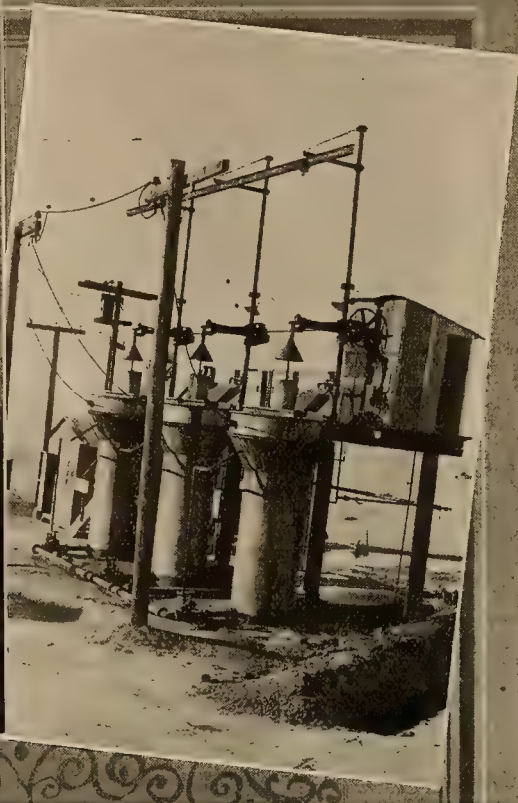
The Kern River field is one of the oldest of California's oil fields and is rather shallow. This, together with the fact that the wells in this field are of low and uniform production and are in certain sections of the field of uniform depth, offers ideal conditions for jack plant operation which obviously requires that wells be pumped at the same number of strokes per minute and the same length of stroke.

A great many companies in this field are pumping on the same leases with both individual motors

nearly as possible average conditions and not with the idea of proving a case for motor drive.

In the Santa Maria fields, with a greater average depth per well and a greater viscosity, but with a slightly higher average monthly production, the kilowatt-hour consumption per barrel of oil produced is exactly the same as the average in the Midway fields and the slight difference in cost per barrel is merely the reflection of the difference in power rates in the two fields. Cost data on this field are shown in Table V.

The old objection that motor drive was not sufficiently flexible for drilling purposes has been over-



ELECTRICITY plays a major role in the California oil fields, as shown in the accompanying photographs. Top left shows an electric drilling rig on the General Petroleum Company's lease at Taft. In the center is a new welding outfit at the plant of the Cunningham Welding Works, Taft. A 28-hp. motor-generator set develops 600 amp. at 60 volts. This is one of the largest installations in the state. Top right shows an electric dehydrator on one of the pipe lines. Immediately above is a 15/35-hp. Westinghouse electric drilling rig used by the General Petroleum Company, Taft. Electric drilling is one of the most recent developments. At the left is a 15/30-hp. General Electric portable pumping outfit at one of the Honolulu Oil Company's wells in the Kern River oil fields.

come by improvements in recent years in motors and controls and it is becoming the most popular method of drive for this purpose.

It is a proven fact that the motor method of drive for drilling is the most economical method yet devised for this purpose. One company, at the pres-

readily adapt itself to constant-speed motor operation. This fault is being rapidly overcome in the more recently designed rotary outfits and there is no reason to suppose that as more study is made of this problem electricity will not to a great extent replace steam as the prime mover in rotary drilling.

Table IV. Cost of Electric Pumping with Jack Plants in Kern River Field

No. Wells	Depth Feet	Average Monthly Production Barrels	Average Monthly Kw-hr.	Average Monthly Bill	Kw-hr. per Well per Day	Kw-hr. per Barrel	Cost per Well per Day	Cost per Barrel
5	950	800	2,370	\$ 33.25	15.8	2.96	\$0.220	\$0.0415
6	750	1,000	1,770	25.55	9.8	1.77	0.144	0.0255
6	600	500	2,946	41.29	16.4	5.89	0.229	0.0826
17	600	800	3,424	47.94	6.7	4.28	0.094	0.0599
22	380	1,340	5,222	73.10	7.9	3.89	0.110	0.0546
13	1,000	5,000	8,520	119.37	21.8	1.70	0.306	0.0238
8	1,000	3,000	4,170	86.42	25.7	2.06	0.360	0.0288
12	1,180	2,422	6,590	92.26	18.3	2.72	0.256	0.0381
18	950	3,000	7,660	107.24	14.2	2.55	0.198	0.0357
32	740	5,000	12,508	174.64	13.0	2.50	0.182	0.0349
4	950	2,700	9,208	128.90	76.7	3.41	1.070	0.0477
22	750	1,566	7,170	100.42	10.8	4.58	0.152	0.0641
227	650	32,192	93,300	950.60	13.7	2.89	0.139	0.0295
392		59,320	166,858	\$1,980.98				
Averages	702				14.2	2.81	\$0.168	\$0.0334

ent time drilling in thousand-foot territory in the Midway fields with a 15-35-hp. motor shows power costs of approximately 15 cents per ft. of hole drilled, or an average power bill of \$150 per well.

The Pinal Dome Oil Company shows the following costs on three wells drilled with a motor, a gasoline engine and a steam engine, as the methods of drive.

	Union Annex No. 1 Electric Motor	Means No. 1 Gasoline Engine	Devlin No. 1 Boiler and Steam Engine
Total Depth of Hole.....	5,108 Ft.	5,208 Ft.	3,955 Ft.
Average Cost for Power, per Foot Drilled	\$0.8211	\$0.8546	\$2.491
Average Expense per Hour of Operating Time for Expense of Labor and Material Including Depreciation.....	\$4.7767	\$7.6480	\$6.7326
Average Cost per Operating Hour for Power.....	.4065c	.8352c	.9376c

In cable tool drilling motors have already demonstrated a decided superiority over other prime movers but in rotary drilling, until quite recently,

An investigation was conducted in 1922 by engineers of the State Bureau of Mines into the various kinds of power equipment in use for drilling and producing oil wells, in California fields. The final conclusion as contained in this report is as follows:

“Due to the development and improvement of electrical equipment and the construction of additional hydroelectric power plants, together with the necessary distribution lines, the time is not far distant when all operations in the proven oil fields will be carried on by means of electric power.”

This prediction is rapidly becoming a fact and the conversion to motors will take place even more rapidly as the gas flow diminishes in the older fields.

Many of the oil fields now under development or survey are either already in territory traversed by high tension lines or are so situated that they may be served electrically at slight expense for line extensions. Thus a profitable source of revenue is opened to central stations having oil fields within their distribution area for, in addition to drilling, electricity

Table V. Cost of Electric Pumping with Jack Plants in Santa Maria Field

No. Motors	Total Hp.	No. Wells	Average Depth Feet	Average Monthly Production Barrels	Average Monthly Kw-hr.	Average Monthly Bill	Kw-hr. per Well per Day	Kw-hr. per Barrel	Cost per Well per Day	Cost per Barrel
26	390	26	1,633	21,630	134,300	\$2,044.50	172.2	6.2	\$2.621	\$0.094
4	60	4	2,560	6,750	19,740	296.10	164.5	2.9	2.467	0.044
7	105	7	2,868	14,520	20,400	306.00	97.1	1.4	1.457	0.021
8	120	8	2,600	20,250	40,076	601.14	166.9	1.9	2.504	0.029
22	330	22	1,439	18,995	124,824	1,822.86	189.2	6.5	2.762	0.096
12	180	12	3,071	18,930	39,938	757.32	110.9	2.1	2.103	0.040
4	60	4	2,900	7,800	19,048	285.72	158.0	2.5	2.381	0.037
42	658	42	3,264	41,292	118,886	1,628.23	94.3	2.8	1.292	0.039
19	285	19	2,355	29,191	78,478	1,184.65	137.7	2.7	2.078	0.046
144	2,188	144	355,517	179,358	595,690	\$8,926.52				
Averages			2,469	1,247	4,136	\$62.04	137.9	3.3	\$2.068	\$0.049

steam has been the preferable power. This was due mostly to the fact that there had been no effort to change the main equipment beyond the prime mover. The remainder of the equipment, having been designed for steam with its greater flexibility, did not

is also being used for pumping on those wells that have ceased to flow or where the flow has dropped below commercial production. This is generally twenty-four hour load and is attractive both from a load and a revenue standpoint.

My Job and Government Ownership

By One of the Workers

WHAT sort of a show do I stand under government ownership? I am just an ordinary employee, one of the thousands of us who seem to be necessary somehow to give utility service in spite of the bunk about "the waters of the Sierras are the natural heritage of the people."

Just where do I come in, anyway? Kind of a selfish question, maybe, in view of the high-sounding ideals spoken by these chaps who advocate government ownership. But I still have to eat and so does my little family, and I seem to be necessary,—that is, someone seems to be necessary, and it might as well be me—to do my little bit for the rendering of electric service.

It is a question—selfish or not—which has led me to study into this proposition of government versus private operation pretty thoroughly. You see, if it was going to affect my job, I wanted to know about it. If it held any rosier promises to me than the present arrangement, I wanted to know that, too, so that I could favor any such measures. But if it didn't offer any improvement on present conditions, why bother with all this fuss about government ownership of one kind or another, thought I.

Laying aside all those other phases of the subject—taxation, rates, financing, high salaried executives, and all the things debated upon by the pros and cons—I think I've found out a few things that any other employee like myself might like to think about. Not that I couldn't write at length on those subjects too, after this study I've made,—I could write a book—but let's just get down to brass tacks on the meal ticket question alone.

What about my job then?

Pretty good. My chances for a job will be about as good as they ever were. There will be plenty of jobs, never fear. I've never seen a government or political enterprise that didn't need as many if not twice as many jobholders as a private enterprise.

Changing over an electric system from private to political management will still necessitate the employment of men and women to make the thing go. Politicians may step in to replace managers, but the fellows who know kilowatts and power factor will still be useful. Someone will still have to strap on spurs to climb the 40's. Someone will have to set meters and somebody else read them. So I'll take chances with my job, as far as just plain job goes.

How about pay?

Well, I don't see that pay will be affected much, either. The best theories and plans still call for human beings to make things run. It's more than likely that they will be run by pretty much the same kind, if not the same people, that now do the dirty work. And pay for skilled workmanship won't fluctuate much. All these "untold benefits" that are promised from reduced operating costs will remain "untold," I'm afraid, on this score.

Changing the titles of utility men and women

won't change human nature. They won't be more saintly or honest nor will they be wizards able to perform miracles because they work for the state. And they'll still have to eat, even if they do work "for the people." Aren't they working for the people now?

But what about individual opportunities under government-owned projects? Not so good!

I won't say that there won't be opportunities for the bright young man or woman. In fact, from what I've seen of politics, a little judicious boot-licking is good for the pull. But then, I suppose some of that is true under any sort of management. Remember, it would be just about the same people running things in any event.

Yet there is something about the very institution of government itself that is mighty cold-blooded and mechanical. I learned that in the army. Human beings are useful as tools, but there is seldom if any personal interest in an employee. Corporations used to be that way too, but show me one today that isn't alive to the fact that personnel cooperation is the chief asset for success and I'll show you a corporation that will be on the rocks if it doesn't "snap out of it."

My company, and I say it with pride, provides me with free insurance against death or disability, old age retirement on pension, a club room where I can meet my cronies or shoot a game of pool. It helps out in employee parties and picnics, provides sports for leisure hours and a library and classes available for my self-improvement if I want them and makes me feel like a mighty important brother in a big, cheerful family. I have yet to hear of such welfare work among any government employees.

Good business for the company? Sure it is! I'm civil to customers because I'm in a happy frame of mind. And I do better work for knowing that I'm well cared for. I'll willingly grant the company **good business** on that kind of a deal.

That's just the trouble with government. It doesn't care whether it does "good business" or not. It exists to do the least possible, it seems, to satisfy its people. That's why that terrible lassitude, that spirit of do-as-little-as-you-can-get-away-with creeps into it, in spite of anything you can do.

We're fortunate, in my town, to have a very sincere man as mayor—an engineer and a humanitarian. When he came into office he noticed the extreme indifference of all city employees to their work, to the public, even toward each other. His secretary, a friend of mine, told me how hard the mayor tried to put some interest and cooperation into the organization and how hopeless it was. Why?

Because no matter what a city employee does he can't get a raise for it. What good does it do him to improve? He is under civil service—under contract to do a certain job a certain way for a certain time. If he wants to advance he has to take an examination and then be put on the waiting list for

an opening in the next job ahead of him. Better work won't earn him anything. Why bother, then? They can't fire him without a lot of rigmarole and they have to prove he's rankly incompetent to do it.

And yet civil service is a necessary evil. It protects the taxpayer and the employee too from politicians placing altogether incompetent men in responsible jobs just because they have "pull." But for all that, civil service does clamp handcuffs on an employee's originality and initiative.

Where I work—a private utility, so-called—the fellow who works hard, studies, is loyal and makes good is rewarded in pay and advancement. There is some incentive to do better work. Civil service employees can't be advanced without breaking up the whole theory of civil service.

My boss started out as a salesman. The chief engineer started as a stoker. Even the office boys are nabbed off for good jobs as soon as they show signs of ability. I have some ambition myself to be one of the main squeezes of the works some day, and it's entirely up to me whether I get there or not—and I like that about my job.

But suppose I did get a managerial job for a politically operated utility. Do you suppose, no matter how sincere I was, that I could altogether ignore popular clamor for some particular plan, or scheme or proposal, regardless of whether it was, from an engineering standpoint, the best thing to do? I might—but I'd lose my job next election if I did.

We have a postmaster here in my town who has done more for postal service than any single man in years. By means of weekly letters to business men, he has educated them to the advantages of early mailing, and other things which make life easier for his very inadequate force of postal clerks and increases their efficiency. But he is apt to lose his head next election, just as he got his job the last one. What will become of his good work in that case—I don't know.

Then, too, there's the matter of equipment. No man can do his best work with poor tools and to see the antiquated methods and equipment used at the post office and the court house and city hall is enough to make me weep. Advocates of this public ownership bug like to point to the post office as a successful government operation. But who will say that it is successful from the point of view of the employee? Poor dubs haven't had an increase in pay in years, with costs of living going up all the time.

And what's worse, **just because they are government employees, they are forbidden by law from working in their own behalf for an increase in salary.** No thanks!

I'm not very much of a capitalist, yet I do own a share of stock in my company, and I'm buying another on easy payments. It isn't much, but it means a lot to me. I feel that I belong to the outfit and that the outfit kind of belongs to me. And the pride of being one of the owners in this enterprise is a real joy. I suppose I also am a part owner of our city water system, because I pay taxes on it and all that, but it doesn't feel the same. It doesn't do anything but assess me, for one thing, and then I can't cash in on it if I leave the city. It isn't an asset, it's a liability. And a municipal power plant would be the same.

Seems to me that the socialists talk a good deal about "the machinery of production" being owned by the producers. Well, that's what I'm doing, isn't it, with my share of stock? That seems to me to be the real way to accomplish this ideal.

Certainly, turning industry over to government is the last way to expect the workers to ever own the "machinery of production." The customer-ownership idea is a lot sounder and there isn't any doubt about it's being better for the employee,—to which class I proudly belong. And so does my general manager, because, you see, he's working for me since I became one of the owners.

Pills—Taking or Chasing Them

Golf—the First Byproduct of Conventions

By Wm. A. Cyr

GOLF, I can well imagine, was invented by a dour Scot with a sardonic sense of humor. "A'll mek me a game nerra a one like it in the wurld," I can see the old boy chuckle, biting a corner off his briar pipe-stem for emphasis.

Then the old gent proceeded to turn all accepted sports upside down. Golf resulted.

For it's a game that spreads itself over 60 acres, instead of a mere gridiron or diamond. And the bleachers have to walk along with the players—only a Scot could have conceived such a mischievous arrangement. Then, instead of having someone else chase the ball, golf makes the batter do his own fielding—another topsy-turvy arrangement.

Any self-respecting sport makes quantity the

basis of scoring. Not so this cynical game of the Scots—the idea of the lowest score winning could only have been thought out by a thrifty soul.

That the electrical industry as a class, and business as a whole, should have absorbed golf like it would absorb so much Scotch of a moist nature—straight—isn't surprising. Golf provided in one dose, painless to take, exercise, relaxation and just the right touch of bizarre to give it zest, yet remained gentlemanly, formal, and somewhat intricate. Engineers, business men, executives and organizers, habitually tied to organization, class and economy and yet desiring and needing relaxation, could not have found a more glorious game.

Golf took the busy man from the melee of busi-

ness, out into a green pasture with nothing more to do or think on than a white pill—putted externally rather than internally. The chap who would die of loneliness on a solitary walk with no excuse for walking, is given a definite goal to reach,—18 in fact,

bless 'em, the reports seem trivial beside that powerful urge to romp and play. Golf is as natural to conventions as teeth to babies and far less disturbing. The real pity is that much of the golf has to be bootlegged when committee sessions are supposed to be in progress—although this doubtless adds savor to the sport.

Inasmuch as no human being can go year in and year out, working watts and megohms and power factors, worrying over socialists and water and power acts, planning extensions and the means to give a million more people all the juice they want and then teach them to want more, building tunnels to tap mountain reservoirs that they also have built, designing steam units to go to bat when Jup Pluvius fails to do his stuff and leaves the mountains as dry as the populace—can anyone with a heart criticize the delegate for leaning toward golf?

As in the case of conventions, I felt strongly that something ought to be done to introduce golf to those few conscientious objectors who yet remain uninoculated. Only by making addicts of them can they be brought to realize what they miss.



The inventor of golf, "A'll mek me a game nerra a one like it in the wurld."

each an achievement in itself. At one stroke it gives him bodily exercise, relaxation and goodfellowship, and still a chance to practice efficiency, skill, executive planning and higher accounting. The mind of a man trained to keep down costs naturally ran to a game that keeps down scores.

At the same time, golf allows a man the opportunity to wear those exceedingly sporty togs—breeches and woolen stockings, ribald sweaters and jackets, and all that gorgeous paraphernalia that a man would hardly dare wear without perfectly golfish provocation.

Is it any wonder that the chief byproduct of conventions is this great game? Delegates spend hours preparing and studying for committee reports, deep and intricate mathematical subjects. They flock to the conventions—meet bosom friends—and Lord



—allows a man the opportunity to wear those exceedingly sporty togs.

And perhaps moisture, which will permeate the next of these articles, as it often does conventions, may have the same things said in its behalf by one who neither golfs nor imbibes—and convenes only rarely.

The Indeterminate Permit

By John A. Laing*

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THIS discussion bears a somewhat colorless and unprepossessing title. One might wish for a phrase or expression better calculated to arouse interest in a question of such prime importance. If much that is said may appear to go beyond the specific subject assigned, it will be because the subject goes to the fundamentals of the relations between the public and its utilities, and demands the consideration and clear understanding of these relations.

The license to occupy the streets and highways with poles, mains and other utility fixtures is commonly termed a franchise. In essence, it is merely a permission to use public property for a recognized public purpose. It is granted, not as a favor to the persons engaged in the business, but as the means of securing to the public a convenient and necessary service. It is founded squarely and solely upon the right of the public to have its property employed to its advantage.

Reference to this elementary principle and its necessary implications will indicate the considerations which should prevail in the granting of such licenses, as well as the nature and purpose of the conditions properly imposed upon their exercise. The license should be granted only in furtherance of a recognized public interest and convenience; its conditions should be only such as will promote that interest, without precluding or unduly restricting other necessary public uses of which the highway may be susceptible.

State policy as embodied in its statutes determines what uses of the highway may be permitted as serving the public interest. The granting of the license, and the fixing of its terms and conditions, are commonly delegated by statute to administrative boards or local municipal authorities, usually without any clearly defined principles or criteria for their guidance. Instead of a uniform state policy, broadly based upon the principle that service to the public is the justification and the object of the license, we frequently find each local unit, by charter and legislative restrictions, and by negotiation sometimes with the aid of a vigorous club, dictating its own policies and imposing its own conditions for permit-

THE problem of franchises is one of the most important confronting the utilities today. Franchises are not granted as favors to people in business but as a means for securing for the public a necessary and convenient service. Despite this, there are no uniform policies governing their issuance. Instead there is confusion of ideas and methods. In this article Mr. Laing points out the necessity for proper legislation regulating the issuance of licenses to use public property for the benefit of the public itself.

ting the supplying of public service within its limits.

The natural result of such practices has been great confusion of methods and ideas, and the general obscuring of the real interests of the public in these so-called franchise matters. For this condition, our predecessors in the utility field are perhaps as much responsible as anyone else. Attempts to regulate the operations of these utilities were frequently met with claims of contract rights based upon stipulations or

conditions contained in their franchises. While such claims rarely availed to prevent just regulation, the mere fact that such claims were advanced stimulated granting authorities to harder bargaining with subsequent licensees, and to greater emphasis upon time limitations as a means of assuring the periodic readjustment of the bargain.

This development is not to be wondered at in the circumstances, even though experience has shown it to have been both unnecessary and unsatisfactory as a method of equitable regulation. It has taken many years of legislative and judicial activity to enunciate the broad scope of governmental powers over such matters, and to demonstrate the ability of the state to deal with these problems effectively and equitably, without recourse or regard to contract or franchise stipulations.

Unfortunately, however, the controversy and the prejudice engendered in course of this development have survived the conditions that occasioned them, and a great deal of this prejudice still persists in the general attitude toward franchise questions. As spokesmen for an industry whose earlier representatives have contributed their full share to the present confusion and muddled-mindedness, it is our duty to aid in clarifying public understanding of these questions, and if possible to point the way to their satisfactory solution. This discussion of the so-called indeterminate franchise or permit is undertaken with that duty and that purpose uppermost in mind.

In taking stock of progress made in dealing with utility problems, we find certain important principles now firmly established and receiving general recognition. One of these has already been referred to, namely, that the basis of all utility franchises in the highway is the right of the public to have its prop-

*From an address presented at Seventeenth Annual Convention, Northwest Electric Light and Power Association, Gearhart, Ore., June 25, 1924.

erty devoted to its own use and service. No adequate consideration of the problem is possible which does not keep this premise clearly in the foreground.

Moreover, whatever agency may be intrusted to perform this public service, whether governmental unit or regulated private industry, its use of the highway is, and should always remain, subject to public regulation and control in the interests of safety, and of co-ordination with other present and future uses of the highway for the public convenience.

Another aspect of this governmental power is of controlling importance. Reduced to its simplest terms, the primary interest of the public in its utilities is to secure adequate service at reasonable rates. The power of the state to safeguard this interest, by appropriate regulation of all such enterprises, is plenary; its ample capacity and effectiveness for the purpose are no longer open to doubt.

Nor does this power rest or depend in any degree upon contract, upon franchise stipulation or condition, or upon the right to control the use of public property. Its essence is governmental, rather than proprietary or contractual; it inures to the state at all times as an attribute of sovereignty. It should not, and in most jurisdictions cannot, be abdicated or bargained away even for limited periods of time.

With this power preserved in full vigor, detailed franchise terms or conditions concerning the rates, quality or other elements of utility service are neither necessary nor helpful to its effective exercise or the accomplishment of its purpose. On the contrary, such terms, and their emphatic assertion by one party or the other as unchangeable contract rights, have frequently confused and prejudiced the timely exercise of this power in the public interest.

Another important public power is relevant to this discussion. The public, through its various governmental agencies, at all times has the right, upon payment to its owner of just compensation for the taking, as determined by its own tribunals in the manner provided by law, to appropriate and take over the properties and business of any public utility enterprise. This right similarly exists independently of, and is superior to, franchise provisions. Moreover, upon its exercise, as in the fixing of reasonable rates, no value or compensation may be recognized or allowed for any franchise, license or permit under which the property to be taken is being maintained. The public pays only for the private property it takes over; the rights in the highway, previously trusted to the utility for a public purpose, automatically revert in their owner without cost or added expense, as a necessary incident of the transaction.

With these rights and interests of the public frankly recognized, what of the interests and rights of the investor in a public utility? His savings are invested in the public service in expectation of the limited, but reasonable, reward which the law contemplates he shall receive under prudent and efficient management. His right to this reward is not a creature of contract, but rests upon the principle that no man's property or its use may be taken for public

purposes without just compensation. His interest and his concern are in the securing of this compensation and the preservation of his principal. His problem is to attain these ends in harmony with the rights and interests of the public. The necessity of harmonizing these interests is obvious if both are to prosper.

We have proceeded far enough to realize that the ideal franchise or license to use the highway is one that will not impair the public right to uninterrupted control of its property in the interests of public safety and of co-ordination with other necessary uses; that will not prejudice the public right to regulate reasonably the operations of those employed in its service; that will promote the interest of the public in securing adequate service on reasonable terms; and that will encourage rather than unnecessarily obstruct the employment of individual savings and individual initiative in supplying these services to the public. With the knowledge and experience obtained from the last half century of discussion and contact with these questions, this ideal should not be difficult to attain.

We must first discard the theory of contract as of controlling importance to the franchise relation, beyond the necessary assurances to the licensee against loss or practical confiscation of his property so long as he continues faithfully to perform the required service in conformity with all reasonable public demands. No other contractual element is necessary or likely to promote the mutual interests of the parties.

Just as the legal institution of marriage, while partaking of certain elements of contract, creates a new status for the parties with certain well-defined rights and obligations, both as concern themselves and the general public, so he who voluntarily assumes the function of a public utility becomes impressed with well-defined obligations and responsibilities in respect of that service. These obligations do not exist by virtue of his use of public property in aid of the service, or of any contract or condition relating to such use. They would be equally applicable and effective were it possible to conduct the service without use of any public property. They arise by operation of law as part of the new status assumed, and are inherent in the undertaking. As such they should be left to the law to define in the light of sound public policy applied to the ever-changing needs and conditions of society. Attempts to define them by contract or franchise obscure the true character of the relationship, and have proved futile and impracticable as instruments of effective control.

The indeterminate franchise or permit, as this form of license has been designated in the states where we find it in operation, is predicated squarely upon the recognition of this status, and the responsibilities and obligations which it creates.

It says in effect that the licensee, whose operations are permitted to serve the public interest and convenience, shall have the right to use the public highways for this purpose, subject to present and future regulation and co-ordination of that use, and subject to public regulation and control of all of his

utility operations, for so long as he performs his duties in the manner contemplated and defined by law, as from time to time declared, or until his property shall be taken over by governmental authority upon the payment of just compensation.

It substitutes for the clumsy, unnecessary and now anachronistic term "franchise," with its incubus of detailed covenant and condition, a simple straightforward license to serve the public in the manner required by law, and an assurance against the confiscation of the licensee's property during his good behavior. It reserves to the public, without the necessity or risk of enumeration, every right necessary for the present and future protection of its interests. Only confusion and misunderstanding attributable to prior misplaced emphasis on contract rights can explain its tardy recognition, or the delay in its universal adoption.

Possibly the rank and file of the community, absorbed in their own immediate affairs, possibly many of those engaged in this very enterprise, have failed to grasp the significance and effect of the fixed time limitations in the ordinary utility franchises to which we are accustomed. This time limitation, be it long or short, means the definite expiration of the right to continue in business at the time fixed. As it contains and implies no right of renewal, as the courts have consistently declared, the licensee eventually becomes a trespasser upon the highway, and his property under such conditions becomes a public nuisance. After its expiration he may continue, if at all, only at the mercy and the whim of existing authority, and his property, no matter how valuable for its purposes or how efficiently maintained, is practically valueless if salvaged or removed.

The necessary and logical consequence of such a condition would be the amortization of the capital investment during the life of the license, by requiring the users of the service to pay such amounts in addition to the expenses of operation, upkeep and interest as will pay back the principal during this period. Surely no valid complaint could be made of the justice or necessity of such action, if the time limitation is to be accepted at its face value; and disaster may readily occur if this course is not followed. In certain instances of notable importance this has actually occurred; and valuable properties have been subjected to practical confiscation upon the expiration of their limited franchises.

Actually, of course, such amortization of the investment is neither practicable nor desirable. It would add an unbearable load upon the cost of the service in the majority of cases, and in any case would paralyze and prohibit the effective maintenance of the property and the service. The manifold items of utility property have varying useful lives and must be repaired and replaced from time to time to maintain the service. An electric system, gradually developing and enlarging to serve the growing public need, does not go along like the "one hoss shay," effective in all of its parts and as an assembled unit, to a point of complete collapse at some definite future date. The very nature of the service requires the constant maintenance, replacement and development

of the various units and of the system as a whole, a condition wholly inconsistent with the idea of paying back the investment during the arbitrary term of the license.

The situation reminds one of the old problem in logic, of "what happens when an irresistible force meets an immovable object." The investment must be amortized; in practice this can't be done. In consequence we don't try to do the impossible, but, nevertheless, serious consequences result to the public and to the enterprise from being placed in this impossible and wholly unnecessary predicament. It takes large sums of money, year by year, to develop the modern utility in pace with the public demand. This money has to be obtained by the sale of bonds and stock to persons familiar with the risks and the problems of the business, and the cost of this money will necessarily reflect the risks to be encountered.

No reputable bond house will offer its clients the securities of a utility, no matter how sound and attractive in other respects, if a substantial part of the investment is under a franchise expiring during, or shortly after, the maturity of the bonds. Those who invest under such conditions are asked to gamble on the renewal of the franchise on reasonable terms, and they naturally demand recognition of this risk in the terms upon which they part with their money. In many cases, adequate financing is impossible when most needed, and the public suffers a double detriment in the loss or impairment of service and in the burden of supporting the cost of an unnecessary risk.

All of this artificial handicap, which benefits no interest and serves no useful purpose, is eliminated by the indeterminate franchise. The adoption of the latter, or its essential features, by all communities intelligently alert to their own self-interest, is bound to come as the present intolerable situation becomes generally appreciated. No complicated legislation is necessary to provide this reform or to secure its benefits. While Wisconsin, Indiana, and a number of other states have adopted rather lengthy and elaborate provisions for this purpose, the essential principle is simple enough and may be put into practice by correspondingly simple enactment.

A legislative declaration in substance that all permits or licenses for use of the streets and highways for utility purposes shall continue during good behavior or until the property erected thereunder is acquired by the public in the manner provided by law, would accomplish the purpose and be readily understood. The expression of this declaration in scientific, legal phraseology may require careful draftsmanship to insure accuracy and conformity with local law, but presents no serious difficulty. The only serious problem is one of education; of clarifying and developing our own and the general understanding of basic principles to the point where present confusion and prejudice will disappear, and the way be cleared for the recognition of these principles in appropriate legislation. The full discussion and comprehension of the so-called indeterminate franchise will mark a long step forward toward the attainment of this ideal.

When Government Goes Into Business

SINCE this is to be a sermon, it is both fitting and proper to begin with a text. Consider, then, the Water and Power initiative measure to be voted upon by the electorate of the State of California in November next, by which, through a constitutional amendment, bonds are to be issued in the amount of \$500,000,000 for the purpose of setting up an unrestricted, unregulated state monopoly of electric power.

Section 3 paragraph (b) authorizes the Board (the California Water and Power Board consisting of five members) "To purchase, acquire, produce, manufacture or otherwise provide facilities, materials and supplies, raw or finished, and any property or thing necessary or convenient to the accomplishment of the purposes of this article."

State May Enter Any Field of Business

It is difficult to conceive of anything broader, or of wider scope than this innocent appearing clause. It requires no great stretch of the imagination to see visions of manufacturing establishments for the production of anything from pole-line hardware to Portland cement. The manufacture within the immediate future, of hydraulic prime movers or electric generators would seem hardly practical, and perhaps the manufacture of Portland cement might seem equally beside the point, nevertheless it should not be forgotten that the City of Los Angeles installed its own cement plant at Monolith during the construction period of the Los Angeles aqueduct.

It would seem almost a foregone conclusion, however, that should this measure pass, as little patronage of private business as possible would follow as a matter of course; in fact, as has been shown in a number of similar situations, permanent state competition with private business in the electrical and general supply fields is not merely possible but highly probable. There is nothing to prevent the Board, if it should feel inclined to build up a larger number of state employees, to employ at day's wages, men to handle house, factory and office building wiring, to open and establish electrical jobbing and retailing establishments to deal with general hardware and building materials, in short to socialize as nearly completely as practical, any industry within the State of California and put existing establishments out of business, leaving to all other industry the responsibility for making up the deficit in the tax rolls that such a procedure would entail.

To help business by putting business out of business is one of the bits of logic offered by the proponents of such socialistic measures as the California Water and Power Act. This measure gives to the board it creates unlimited and unheard of powers. What happens when communism is given an opportunity is shown by a survey of the Turlock and Modesto Irrigation districts, where stores have been opened and a general supply business is being carried on to the detriment of private concerns engaged in similar activities.

It is all very well to say, "Of course it wouldn't do anything of the sort." The fact remains that under this Act, it (the Board) could do so, legally, if it felt so inclined, and it would seem to be the height of folly to go away at night and leave the safe door unlocked because of a child-like belief in mankind, especially since, in this particular case, even the policeman on the beat would be empowered to help carry off the loot.

To help business, by putting business out of

business, is a curious bit of logic, yet this is in effect, one of the claims made by the sponsors of the Los Angeles Bureau of Power and Light, in speaking of the alleged benefits derived by everything from retail stores to factories through the acquisition by the city of the privilege of producing and distributing electrical energy in that city.

Experiences in Modesto-Turlock District

As an example of how this idea works in actual practice, consider the Turlock-Modesto irrigation project. This, of course, is not a state enterprise, but a local scheme which, nevertheless, closely parallels the idea conveyed above, and gives a fair example of what one may reasonably expect, in the course of time, if the Water and Power Act should by any unhappy chance pass this fall.

Originally devised as an irrigation project, the two districts, Modesto and Turlock, voted an aggregate amount of \$6,000,000 in 1920 for constructing the Don Pedro dam, for the purpose of storing water for use during the summer months. A. J. Wiley, an engineer in the employ of the U. S. Reclamation Service, recommended as a conservation measure the installation of three 5,000-kva. units through which power could be generated as a byproduct of the primary purpose of the water, and that the power thus produced be wholesaled to the private power companies whose distribution lines were adequate to deliver this additional electrical energy to the consumers in the two districts.

Shortly before the bond issue came before the public, the board of directors, which at the time was favorable to wholesaling the power, agreed that before any arrangement could be made for disposal of the power the project should be submitted to a vote of the people, allowing them to state whether or not the power should be wholesaled to a public utility company or whether it should be retailed by the districts themselves.

Private Company Offers to Buy Energy

The dam and power house were erected, and in the latter part of 1922 it became necessary to decide how the electrical energy should be disposed of. The Pacific Gas & Electric Company made an offer to purchase the power from the two districts, paying four mills per kw-hr. for such electricity as irrigationists should supply from the power house. The company agreed to take the power as it should come from the power house, placing no restrictions upon maximum or minimum amount. The Pacific Gas and Electric Company had a line extending to the Don Pedro power house, and the proposal provided that the company should take power from the districts at the power house; thus no additional expense to the district for transmission or distribution lines would be necessary.

Under a separate agreement which had been signed previous to the erection of the Don Pedro dam, the Pacific Gas and Electric Company was to get 10,000,000 kw-hr. per year from the power generated at the Don Pedro power house in return for certain water rights that the Pacific Gas and Electric Company deeded over to the two irrigation districts. This power was to be delivered to the company at the power house without cost.

At the election held the latter part of 1922, the people voted that the power should be retailed direct by the districts contrary to a recommendation presented by Louis F. Leurey, electrical engineer who had been secured to make a recommendation concerning what should be done with the Don Pedro power. The offer of the Pacific Gas and Electric Company was rejected and it was necessary that additional money be raised for the purpose of erecting transmission and distribution lines to serve the two irrigation districts. Each district voted \$1,000,000 for this purpose and a joint transmission line was erected. The cost of this line was pro-rated according to the amount of power that each district was entitled to receive.

Districts Enter Manufacturing and Retail Field

At the time that the districts decided to go into the retailing of power, R. W. Shoemaker, electrical engineer of the Turlock Irrigation District, proposed to utilize the power that would be generated at night by building a fertilizer plant near the Don Pedro power house, and it was his contention that fertilizer could be manufactured there at a cost of \$8 a ton. It was his plan to operate the fertilizer plant from eight to ten hours a day, using the power only when demands of the districts did not reach the capacity of the Don Pedro power house. However, nothing was done to carry out the plan, and the matter was dropped.

The transmission line and two sets of distribution lines were erected by the districts, and the Turlock Irrigation District started serving consumers about June 1, 1923. The Modesto district started serving its consumers about Oct. 1, 1923.

Shortly after the districts went into the distribution of power, the Turlock Irrigation District

opened a retail electrical store to sell electrical appliances to residents in the district at about 20 per cent above the district's own cost. The Modesto district did not open a store until about March, 1924.

Both districts have been active in their efforts to secure a large number of consumers, both in the towns of Modesto and Turlock and in the outlying sections where distribution lines have been installed. Solicitors have been employed to assist in securing business, and to facilitate their efforts, forms have been prepared that are used to advise the private company that the consumer desires to discontinue its service. The Modesto Irrigation District uses printed postcards, advising the private company to remove the meter immediately as the consumer has accepted service from them. In some cases, the company finds that employees of the district have removed the meter and that it is lying on the ground. All that is necessary for the consumer to change service to the Modesto or Turlock Irrigation District lines, is to sign either the postcard furnished him by the Modesto district or the mimeographed letter furnished by the Turlock district. The Turlock letter advises the company "to remove your meter as soon as, but not before, you are notified that they have made connection to my premises." The Turlock district also secures from a prospective consumer his signature on a contract specifying that the consumer will accept service only from the Turlock Irrigation District as long as the contract is in force. As a general rule these contracts are made out for a period of two years.

Does This Constitute a "Blacklist"?

In their efforts to secure business in Modesto, the irrigation district men have prepared a list of "approved" merchants. This list of merchants includes only those who are taking service from the Modesto Irrigation District. They are given a card to place in their windows carrying the information that they are "helping to reduce taxes" by using Don Pedro electric power. Many of the merchants, even though they are supporting the district, object to being forced into the purchase of district power by this method.

The retail store conducted by the Modesto Irrigation District has been open for business since about the first of March. At present the material that is being handled in the store consists principally of ranges, water heaters and air heaters. The ranges occupy the principal position. In addition, there is carried quite a comprehensive stock of wiring material. In fact, all the material that is necessary to wire a house is handled by the district office. All of the devices and appliances that are handled by the district are sold at about 20 per cent above net cost to the district. It is the theory that this 20 per cent added to the cost of the goods will carry overhead expenses. No check has been made as yet and it is not known what the running expenses of the store will be. There is one man employed, the store occupying a space approximately 50 by 100 ft. Ranges line both sides of the walls and towards the rear of the store there is a small stock of water heaters.

It is the policy of the store to sell this material in order that the district's load may be greatly increased by getting the current-consuming devices on the lines. It has not been decided yet whether or not the district will go into the merchandising of the smaller appliances, but, if the farmers demand it the districts will probably comply in the near future.

Although the farmer is not advised to make his own installation, in many cases this work is being done either by the home owner himself or by the home owner under the guidance of some farmer who has a smattering of knowledge of electrical wiring. In many cases there are high school students and others who have received minor education in this work and they are directing the farmers as to methods of wiring their own homes.

Dealers Find Conditions Discouraging

The district office does not recommend the name of any electrical contracting firm in Modesto, but supplies a list of private firms from which the farmer or city consumer may select any one he chooses and get that concern to do the wiring for him.

It is not known how many ranges have been sold but it is probable that the number is around half a carload for the period that the store has been open. It is stated that seven carloads of ranges have been sold in the Turlock store since June, 1923.

Established dealers deplore the condition as it is in Modesto at the present time, and state that it is most discouraging to find the district coming in and taking business from private concerns which have been serving the public for years. Under present conditions where farmers and amateurs are doing their own work, the quality and efficiency of installations have fallen off greatly.

Established concerns are getting practically no new business in the contracting field as a result of new homes being put on the lines of the Modesto Irrigation District and it is difficult to ascertain who is really doing the wiring business, unless it might be the curbstoners and the home owners themselves. It is stated that contractors can buy wiring supplies from the district office at the regular price they charge to the public. These prices are often less than the wholesale jobber's prices in San Francisco for the same material.

Effect on Other Businesses

It should not be assumed that the socialization, or communization perhaps, of the Turlock-Modesto district is confined to district competition with private business in the electrical industry alone. On the contrary it is gradually extending more and more into other fields, principally general supplies, building supplies and hardware. It has been stated that the district sells Portland cement, for instance, and lumber at prices ranging from 10 to 25 per cent less than any retail merchant can possibly make and live. Even the automobile accessory man is suffering, one accessory shopkeeper stating that his tire business has dropped to about one-third its former volume through the competition of the district store which is selling tires and automobile supplies. Over all merchants engaged in private business in this district

there is the ever-present fear of the boycott by those interested in the district itself. Many of these merchants own their homes and have money invested in their business. They could not move elsewhere without sacrificing the property they have accumulated since they settled in the district.

Example of Socialistic Community

What becomes of the losses that must accrue in the operation of the various retail store enterprises under the jurisdiction of the district is not known, but it is of course more than likely that they are absorbed in the general affairs of the district as a whole as is customary in enterprises of this character.

While it is not claimed that the Turlock-Modesto enterprise is a state-owned and operated institution, nevertheless, it represents in a local sense, what might be expected under the operation of the proposed California Water and Power Act. It is a fair example of a socialistic community, even communistic enterprise, and what will happen to private business, should the State of California be converted into one great Turlock-Modesto district, in which conceivably every business activity might be a community affair.

While the farmers owning the land which has been heavily bonded for the purpose of financing their enterprise, must nevertheless pay state, county and federal taxes, as do all other private citizens, as well as charge their enterprise with the sums required for amortization and interest on their bonds, the competition that might be set up by the state under the proposed Water and Power Act would be infinitely worse. The state ownership and control scheme would have to pay no taxes and would require only provision for amortization and interest payments of bonds, and even this may be camouflaged through the easy access to the proceeds of general taxation, as provided by the Act (Sec. 7 providing that bonds may be sold for the purpose of meeting principal or interest payments) and (Sec. 9 that if moneys in the state treasury shall be insufficient for the payment of principal or interest of bonds, moneys shall temporarily be advanced from the general fund for that purpose).

Study of Socialistic Community

To see into the future, one must study history. There is the history of the South Dakota fiasco, the government operation of railroads during the war, the fact that Detroit, Seattle and Los Angeles have the highest tax rates, respectively, of any cities in the United States, and that all three are given over to the extensive operation of municipally owned and controlled utilities, and then there is the local experiment in communism represented by the Turlock-Modesto Irrigation District, beginning as a simple organization of landowners anxious to improve their crops by the development of water for irrigation purposes, and then, as the virus spread, engaging successively in the power business, and the retailing of electrical appliances and supplies.

To learn what one must expect in the future, one must study the past.

California's Tie-in with the Better Home Lighting Campaign

AT a meeting of the California State Cooperative Campaign that took place in San Francisco Friday, Aug. 29, plans were formulated for the participation of the Twelfth District in the Better Home Lighting Campaign. R. E. Fisher, regional director for the Twelfth District, presided at the meeting. The Twelfth District includes the states of California, Nevada and Arizona.

Generally speaking, the underlying motive of the entire campaign is to promote better, that is, more intelligent lighting of homes. It is stated to be a fact that 25 per cent of the school children of this country have defective vision and when minor defects are added the total becomes nearly 75 per cent. Engineers in developing high intensity illuminating apparatus have realized that the advantage of the high intensity would be entirely lost if it were not intelligently applied. Their methods of attack for disseminating knowledge on this subject have not proved wholly satisfactory, so a committee of national leaders of the electrical industry was appointed, a fund raised and a plan devised whereby the story of better lighting could be carried into the homes of the American people. It was believed by the committee that if the school children could be interested in the fundamentals of proper home lighting an interest in this subject could be created whereby a great change could be brought about in existing methods and thus conserve the eyesight of this as well as succeeding generations.

In brief, the plan provides for setting up a series of prizes for the best essays on better home lighting. By competition for these prizes the interest of the school children will be aroused; they will be thus encouraged to study the subject and they will undoubtedly see in their own and their neighbors' homes glaring examples of bad lighting, and at the same time will inform themselves as to the best ways and means of correcting them.

Nationally speaking, the greater part of the fund raised will be expended in a national advertising campaign which will carry the message of what the campaign is about and what it expects to accomplish into the homes of the great intelligent American public. Then there are state campaigns which tie in with the national campaign, follow up the impression created and in reality constitute the field forces for the purpose of carrying the message of better home lighting to everybody.

The plan devised by Mr. Fisher and his committee provides for the division of the State of California into twenty-one districts, each district in charge of a local committee. It is proposed to effect a contact with the schools through the school department and the teachers. All school children ranging in age from ten on up through the high

schools are eligible to participate in the essay contest. Application blanks are to be distributed to each pupil eligible. Upon receipt of the application blank by each local committee a lighting primer, which is really a textbook on the fundamentals of lighting, clearly and simply written, is sent to each contestant. The primer also embodies typical plans of the rooms ordinarily found in the average home together with a series of sketches of the various lighting fixtures, which the contestant can cut out and paste in the blank plans carried in the back of the book to show how he or she would light the home. The essays, which are limited to six hundred words, will tell the reasons why. Each contestant is required to set forth how he or she would light his own home and make the same comments and criticisms on the lighting of two neighbors' homes.

The international prizes include the following:

- First Prize—
\$15,000 model electrical home (to be built on lot provided by winner).
- Two Second Prizes—for one boy, one girl—
\$1,200 scholarship in American or Canadian College or University of accepted standard.
- Two Third Prizes—for one boy, one girl—
\$600 scholarship in American or Canadian College or University of accepted standard.
- Two Fourth Prizes—for one boy, one girl—
\$600 scholarship in American or Canadian College or University of accepted standard.
- Two Fifth Prizes—for one boy, one girl—
\$300 scholarship in American or Canadian College or University of accepted standard.
- Two Sixth Prizes—for one boy, one girl—
\$300 scholarship in American or Canadian College or University of accepted standard.

In addition to these, there will be state prizes in California and also district prizes in each district.

Since Mr. Fisher was appointed regional director it was deemed advisable that the organization of the California Electrical Cooperative Campaign should be employed to excellent advantage in handling all details for the reason that it was already set up to do this class of work and had adequate facilities available to proceed at once.

A fund of \$15,000 is to be raised within the electrical industry to carry on the expense of the state campaign, provide prizes, etc. Two state committees have been appointed—the Finance, of which R. M. Alvord is chairman; the Advertising and Publicity, of which C. T. Hutchinson is chairman; and a Judging Committee which will determine the relative merits of the many essays that will be submitted. It is proposed that the latter committee shall include three prominent educators, three lighting engineers and one member of the Cooperative Campaign who will act as chairman. Each local committee will assume among its other activities the function of judges with respect to the local essays so that only the prize win-

ners locally will come before the state committee. Of these the state committee will select the most meritorious and forward them to the national committee for consideration in the awarding of the national prizes. The function of the state Advertising and Publicity Committee is to provide advertising copy and publicity matter for dissemination through power company publications, teachers' journals, health and optical bulletins and to arrange for the broadcasting of radio messages.

In the organization of districts within the state it has been attempted as nearly as possible to center those local organizations at points where there is an electric club so that the activities in those districts may become a function of that organization. Remaining districts have been divided up according to power company territorial divisions and the activities

ARRANGEMENT OF DISTRICTS

Dist. No.	Embracing	League	District Chairman	Address
1	Del Norte Co. Humboldt Co. Trinity Co.	None	Geo. McDonald	Western States G. & E. Co., Eureka, Calif.
2	Shasta Co. Lassen Co. Tehama Co. Glenn Co. Plumas Co. Butte Co. north of and including Chico.	Northern Cos. Elec. Dev. League	L. R. White	P. G. & E. Co., Chico, Calif.
3	Butte Co. south of Chico Colusa Co. Sutter Co. Yuba Co. Sierra Co.	Yuba-Sutter Elec. Dev. League	F. A. Peck	P. G. & E. Co., Marysville, Calif.
4	Nevada Co. Placer Co. El Dorado Co.	None	H. S. Furlong	P. G. & E. Co., Auburn, Calif.
5	Sacramento Co. Solano Co. Yolo Co.	Sacramento Valley Elec. Society	Roy Phelan	910 Ninth St., Sacramento, Calif.
6	Mendocino Co. Lake Co. Napa Co. Sonoma Co. Marin Co.	Marin County Elec. Dev. League	J. S. Ross	P. G. & E. Co., San Rafael, Calif.
7	San Francisco County	S. F. Elec. Dev. League	H. H. Allison	Elec. Appli. Co., San Francisco, Calif.
8	Contra Costa Co. Alameda Co.	Oakland Elec. Club	Clark Baker	562 11th St., Oakland, Calif.
9	San Mateo Co. Santa Clara Co. north of Gilroy	Santa Clara Valley Elec. Dev. League	R. R. Robinson	P. G. & E. Co., San Jose, Calif.
10	Santa Cruz Co. San Benito Co. Monterey Co. Santa Clara Co. south of and incl. Gilroy	Monterey Bay Elec. League	J. F. Pollard	Coast Valleys G. & E. Co., Salinas, Calif.
11	San Joaquin Co.	None	H. K. Griffin	Western States G. & E. Co., Stockton, Calif.
12	Amador Co. Alpine Co. Calaveras Co. Tuolumne Co. Stanislaus Co.	None	L. J. Nevraumont	P. G. & E. Co., Modesto, Calif.
13	Merced Co. Mariposa Co. Madera Co.	None	A. M. Frost	San Joaquin L. & P. Corp., Madera, Calif.
14	Fresno Co. Tulare Co. north of and including Dinuba	None	A. M. Frost	San Joaquin L. & P. Corp., Madera, Calif.
15	San Luis Obispo Co. Santa Barbara Co. north of and including Santa Ynez	None	A. M. Frost	San Joaquin L. & P. Corp., Madera, Calif.

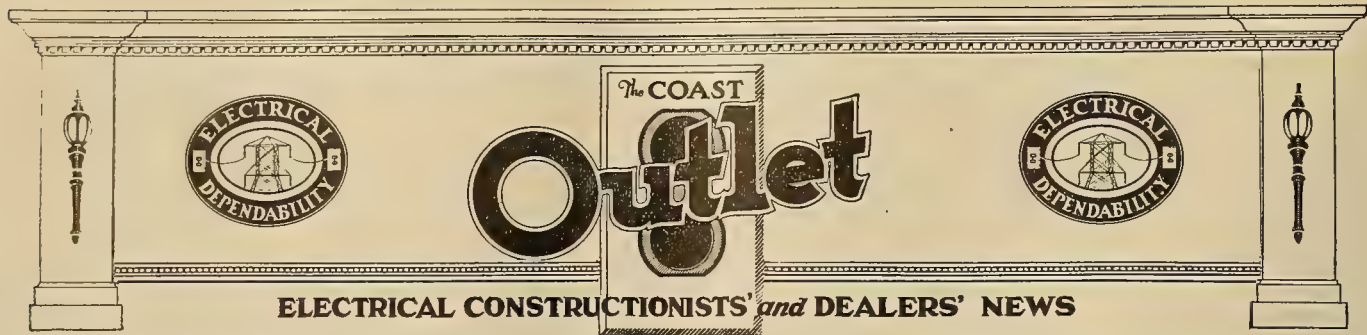
ARRANGEMENTS OF DISTRICTS—Concluded.

Dist. No.	Embracing	League	District Chairman	Address
16	Kern Co. Kings Co.	None	A. M. Frost	San Joaquin L. & P. Corp., Madera, Calif.
17	Tulare Co. south of Dinuba	None	R. R. Carruthers	So. Cal. Ed. Co., Visalia, Calif.
18	Los Angeles City	Los Angeles Elec. Club	K. E. Van Kuran	Westinghouse Elec. Co., Los Angeles, Calif.
19	San Diego	San Diego Elec. Club	A. E. Holloway	San Diego Cons. G. & E. Co.
20	Los Angeles Co. Orange Co.	None	A. W. Childs	So. Cal. Ed. Co., Los Angeles, Calif.
21	Ventura Co. Santa Barbara Co. south of Santa Ynez	None	A. W. Childs	So. Cal. Ed. Co., Los Angeles, Calif.
22	Mono Co. Inyo Co. San Bernardino Co.	None	George Bigelow	So. Sierras Pwr. Co., Riverside, Calif.
23	Riverside Co. Imperial Co.	None	George Bigelow	So. Sierras Pwr. Co., Riverside, Calif.
24	Nevada	None	Geo. A. Campbell	Reno, Nevada
25	Arizona			

therein will be conducted with the cooperation of the power company and its district officials. It will be the duty of each district chairman so to organize his territory that the fullest information possible concerning the contest may be disseminated as broadly as possible throughout the electrical industry. Each district committee will have its own advertising committee, publicity committee and judging committee. The advertising committee will secure the cooperation of dealers by which their shop windows may be utilized to tie in with this effort. The jobber's salesmen in each district may also do a useful work in telling the story. Wherever possible it is advisable that each district shall have a school relations committee which will work through the schools in securing the broadest dissemination of literature possible.

The California Electrical Cooperative Campaign through its general offices in the Rialto Building, San Francisco, will secure and distribute registration cards and primers and all other printed matter through the district chairmen upon demand. The primers will be allocated to districts according to population as disclosed by the last census and will be supplied only upon receipt by the campaign of contestant's registration cards properly filled out. With the proper effort registration cards will be passed around and returned properly filled in to the offices of the Cooperative Campaign not later than Oct. 10.

There will be five prizes provided for each district in the state, as follows: \$75, \$50, \$25, \$10 and \$5. In addition there will be six state prizes: \$500, \$250, \$100, \$75, \$50 and \$25. It should be pointed out most emphatically that this campaign is an educational movement pure and simple. It is absolutely non-commercial and the interjection of any commercialism into the campaign will not be permitted. It is a constructive move for the achievement of a hygienic purpose. This in itself, if it can be accomplished, will more than justify the outlay of time and money on the part of the electrical industry.



A Practical System of Accounting for Contractor and Dealer

By F. V. Mitchell

IN the Aug. 15 issue of the Journal of Electricity an illustration of the summary of total costs and selling prices of jobs finished during a month was presented, from which the monthly gross and net

profits of departments Nos. 1 and 2 can be ascertained as shown in Table I.
As will be noted from the above example, the gross profit is ascertained by deducting the material

SUMMARY OF WIRING							
JOB No	NAME	LOCATION	SELLING PRICE	%	LABOR	%	MATERIAL
476	VARIOUS		52500	100	12000	23	24750
477			36500	100	7500	21	16250
478			45000	100	10000	22 1/2	20000
479			27500	100	5500	20	11000
480			57500	100	13000	23	27250
481			46000	100	10500	23	21700
482			44000	100	8500	19	18100
483			42500	100	5500	13	19900
484			55750	100	10000	18	30050
493			36750	100	8900	24	15600
TOTALS			444000	100	91400	20 1/2	204600

Fig. 1.

and labor costs from the sales, and the net profit by deducting the overhead expense from the gross profit. All percentages of costs, overhead and profits are figured on the amount of sales as 100 per cent, and deductions made therefrom in the same manner. The percentage of overhead expense to the sales should always equal the difference between the per-

For instance in the above example, the percentage of overhead to material and labor costs in department No. 1 is 35 per cent as against 23-1/3 per cent to the sales, and in department No. 2 is 75 per cent as compared with 39 per cent to the sales. The percentage of overhead to costs is ascertained by dividing the total overhead expense by the total amount of ma-

		TABLE I			
		1	Per Cent	2	Per Cent
Sales	\$4,440.00		100	\$1,900.00	100
Cost of Goods Sold—					
Material	\$2,046.00	46		\$653.00	34
Labor	914.00	20-2/3	66-2/3	325.00	17
				978.00	51
Gross Profit	\$1,480.00		33-1/3	\$922.00	49
Overhead Expense.....	1,036.00		23-1/3	733.50	39
Net Profit	\$ 444.00		10	\$188.50	10

centages of gross and net profits, and it is necessary to show this merely to prove the correctness of the percentages of gross and net profits. The percentage of overhead to sales should not be confused with the percentage of overhead to costs, the latter being considerably higher and the proper one to use as an addition to estimated material and labor costs for contract bid purposes to cover overhead sufficiently.

terial and labor costs, and is therefore necessarily the proper percentage to add to material and labor costs to take care of overhead.

Figs. 1 and 2* contain an illustration of the summaries of wiring and fixture jobs, respectively, finished during the month, which are prepared from the detailed job cost sheets at the end of each month

*Fig. 2 will appear in the Oct. 1, 1924, issue of the Journal of Electricity.

FINISHED DURING MAY, 1924							
Total Job Cost	%	Gross Profit	%	Overhead	%	Net Profit	%
26750	70	15750	30	11000	21	4750	9
22750	65	12750	35	9100	25	3650	10
30000	66 2/3	15000	33 1/3	10500	22 1/2	4500	10
16500	60	11000	40	6875	25	4125	15
40750	70	17250	30	13075	21	4175	9
32200	70	12800	30	10560	23	3240	7
26600	60	17400	40	11000	25	6400	15
25400	60	17100	40	10625	25	6425	15
40050	70	15700	30	12265	22	3435	8
24500	66 2/3	12250	33 1/3	8575	22 1/3	3675	10
296000	66 2/3	148000	33 1/3	103600	23 1/3	44400	10

Fig. 1.

after the sheets covering the jobs completed during the month under survey are taken from the active binder and before they are placed in the finished binder. The totals of the selling price, material and labor costs, gross profit, overhead expense and net profit of these individual jobs should agree with the amounts as shown in the above example, which are also identical with the figures that will be shown later in the monthly profit and loss statement. With these total amounts in agreement, they constitute a final proof that the entire work in connection with the detailed job cost sheets has been handled correctly.

The value of such information as contained in Figs. 1 and 2 is paramount to the management of a business as it shows at a glance the exact result of each job upon its completion, and from which the proper corrective measures when needed can be taken on any similar jobs in the future. Without information of this nature readily at hand a business is bound to be operated more or less in the dark, and the results of this method of operation are known generally to prove fatal. These summaries show the

net result of each job upon its final completion for future guidance, but through the continual reference to the detailed job cost sheets and work in process statements the results of each job can be watched very closely while in progress, and any necessary corrective measures as to their handling taken before the completion. The Work in Process statement is particularly valuable in respect to showing each job in process so that the proper measures can be taken to expedite the completion of the jobs that appear to be dragging along for an unreasonable length of time, and consequently tying up capital unnecessarily.

As will be readily seen from the foregoing illustrations, all statements and data prepared dovetail right into one another and after the detailed cost system is once properly started the amount of clerical work entailed in its operation is reduced to a minimum by this same regularity of routine. There is surely no safer nor saner method of accounting than this, as all work remains in process on the books until completed and no profits on jobs are taken into account until that time.

Electrical Construction

By E. Earl Browne

FIGS. 17, 18, 19 and 20 in this issue together with Fig. 14 in the Aug. 15 issue of the Journal of Electricity, go to make up a set of five forms issued by the Association of Electragists, International, which are designed to be used with the association's "Manual of Estimating." It will be noted in Fig. 17 that six columns have a heading

"Pipe Entrances" with subheadings "Ceiling" and "Wall." The association's method of estimating labor is probably more accurate than any yet devised as under that scheme a job is divided into its logical parts and classified as to type of construction of floors, walls and ceilings.

When taking off a job it is necessary to count

[illegible]

Fig. 18.

Form 4

PRICING SHEET

ESTIMATE NO. _____

JOB _____ SHEET NO. _____

WORK _____ OF _____ SHEETS

ESTIMATED BY _____

PRICED BY _____

EXTENDED BY _____

CHECKED BY _____

DATE _____

MATERIAL

QUANTITY

MATERIAL
LIST PRICE

DISC

DISC

EXTENSION

LABOR
UNIT PRICE

PER

EXTENSION

Fig. 19.

This could, however, be done by using an extra sheet of form No. 3 (Fig. 18). It will also be noted that in addition to a space for the estimate number there are two spaces for numbering of the sheets, which is a very important feature as it is a very easy matter to omit one of the sheets, and it is for that reason that the writer is in favor of the use of as few sheets as possible—such as those shown in the May 1 and May 15 issues of the Journal of Electricity. In listing the conduit on Form No. 4 (Fig. 19) the labor subdivision must be noted as the unit per hundred feet is one amount for branch circuit work and another amount for feeders and motor circuits, the latter being subdivided as to method of installation; i.e., if the motor circuits and feeders are in floor slab the unit would be 25 per cent less than if they were run exposed on wall or ceiling, which is worthy of note if there be a considerable quantity of each. Also, in listing wire of No. 10 and larger sizes it is necessary to list the number of runs and also the runs containing less than 150 lb. of wire in addition to those runs that require more than that amount.

[illegible]

Fig. 20.

[illegible]

Fig. 17.

Some Facts About Ground Conductors in Conduit Code Committees Established in Seventy-One Cities

Fallacies Regarding the Shunting of Conduits and the Bonding of Ground Wires Often Lead to Poor Wiring Practice

Both protective ground conductors and lightning arrester ground conductors are frequently installed in iron conduit. It is generally understood that a lightning arrester ground, if installed in an iron conduit, should be bonded to the conduit at both ends. In some cases public utilities and city inspection departments require protective grounds, when run in conduit, to be bonded thereto.

The general impression is that bonding a conductor to the containing conduit eliminates the choking effect of the conduit, which otherwise is very serious, even on 60-cycle current, to say nothing of the higher frequencies involved in lightning disturbances, etc. In some instances, particularly where flexible conduit or armored cable is used, a separate wire is used to bond (or more properly, shunt) the conduit. The fact of the matter is that neither bonding nor shunting a conduit appreciably reduces the choking effect. Shunting a conduit is not in any way beneficial so far as the resistance of the ground wire contained within the conduit is concerned. Bonding the ground wire itself to the conduit simply has the effect of substituting the conduit for the wire and the benefit derived from doing so depends upon several things.

If a No. 8 copper conductor is run in ½-in. steel conduit and a short circuit ground current of 250 amp. is passed through the wire, the voltage drop across the conductor, as soon as it becomes hot, will be approximately 70 volts per 100 ft., whereas if the same current be conducted through the conduit itself the drop across the conduit will be only about 25 volts per 100 ft. It is therefore apparent that by substituting the conduit for the conductor the effective resistance of the circuit will be very greatly reduced. It is interesting to note, at this point, that under the

conditions of current flow stated, the resistance of the No. 8 conductor itself, if not contained in conduit, would be about 50 volts per 100 ft.

If the wire is contained in a flexible conduit or steel armored cable, bonding is of little value so far as low voltage, short circuit, 60-cycle currents are concerned, as the resistance of the conduit or armor is greatly in excess of the resistance of the conductor contained within it, and there is, therefore, no material reduction in the resistance of the circuit. However, in order to properly take care of high frequency disturbances, bonding is highly desirable in every case.

Electricity Used to Dry Ink on Job Printing Work

The drying of job printing work is one of the new tasks that has been assigned to electricity by the Panama Stationery Company, San Francisco. This company has taken an electric dryer, designed for use in connection with process embossing work, and has used the device in the drying of job printing work to speed up production on rush orders. Through the use of the machine the time required for the drying of the ink has been reduced from a period of hours to one of minutes.

The dryer consists of four 500-watt heaters placed over a variable speed endless conveyor driven by an electric motor. The degree of heat and the speed of the conveyor may be varied to suit the job. Form letters, notice cards and varieties of printing jobs can be put through the dryer and the job delivered in a few hours in case of necessity. The device as used by the Panama company is limited to sheets of about 12 in. in width, but larger machines with a greater number of units could be designed.



Electric dryer for quickly drying job printing work.

Since the last convention, the Association of Electragists, through its Code Committee, of which A. Penn Denton is chairman, has endeavored to set up throughout the country local code committees composed of representatives of the several branches of the industry. It is now possible to announce for the first time the cities in which such committees have been organized.

Sixty-nine cities in the United States and two in Canada, a total of seventy-one cities, have organized local code committees. In commenting upon the enthusiasm with which this idea was received by the industry, Mr. Denton said:

"I am very enthusiastic over the way our membership and the other branches of the industry locally, throughout the country, have taken to this work and I believe we have undertaken an educational work in the study of code and ordinance conditions in the larger cities of this country that will have a far-reaching effect in improving the business of our members wherever this is done, as well as obtaining invaluable data for the use of the electrical committee in its next code revision work."

Cities in which local code committees have been organized are as follows:

Alabama—Birmingham, Mobile.
Arkansas—Hot Springs, Little Rock.
Colorado—Colorado Springs, Denver.
California—San Francisco.
Connecticut—Hartford, New Haven, Waterbury.
Florida—Jacksonville, Miami, Tampa.
Georgia—Atlanta, Columbus.
Illinois—Decatur, Galesburg, Springfield, Peoria, Joliet.
Indiana—Indianapolis, Terre Haute.
Iowa—Cedar Rapids, Davenport, Des Moines.
Kentucky—Louisville.
Kansas—Kansas City, Pittsburg, Salina, Topeka, Wichita.
Louisiana—New Orleans, Shreveport.
Massachusetts—Boston.
Maryland—Baltimore.
Minnesota—Minneapolis, St. Paul.
Mississippi—Jackson, Vicksburg.
Missouri—Kansas City, St. Joseph.
New York—New York City.
Nebraska—Lincoln, Omaha.
New Jersey—Newark.
North Carolina—Raleigh.
Ohio—Columbus, Dayton, Springfield.
Oklahoma—Muskogee, Oklahoma City, Tulsa, Okmulgee.
Pennsylvania—Pittsburgh, Wilkes-Barre.
South Carolina—Charleston.
Tennessee—Memphis.
Texas—Dallas, Fort Worth, Houston, Beaumont, Galveston, San Antonio.
Virginia—Newport News, Norfolk, Richmond.
Wisconsin—Milwaukee, Sheboygan.
Washington, D. C.
Canada—Winnipeg, Toronto.

Denver, Colo., Contractors' Association Moves Offices.—The Denver Electrical Contractors' Association has moved its headquarters to the Nevada Building, 532 17th Street, and is operating temporarily without a full time secretary and field man pending the appointment of such an individual. E. A. Scott, prominent Denver electragist and member of Scott Brothers Electric Company, is serving as secretary and treasurer.

Don't Forget the Annual Convention of the

CALIFORNIA STATE ASSOCIATION

L. LUNKHEAD LAMPOONED STUCK WITH STILETTO

By JOE OSIER

Louie Lunkhead, the prize dumb gluck west of Chicago, had the dice and the floor at a recent meeting of a certain contractor-dealers' association and—

He was throwing fours and twelves and nothing else and each time he opened his mouth, he proved by his own statements that he was named correctly, for—

Let it be broadcast from stations A to Z, Louie was a phathead right—he was always wrong and proud of it, and his opinions were as valued as a—

Fur coat in flytime.

Before he was "counted out" at this particular meeting, Louie, with waving hands and bleating voice, declared that any man who put out prunes for advertising was in the line for inspection by a lunacy commission, adding—

"I never spent one dime for ads. Nobody reads 'em. Nobody believes 'em. Nobody ever got nothin' from buying

He ridiculed the idea that to stop advertising is to stop greeting old friends and to stop making new ones; in fact, Louie couldn't see the point and that was the reason—

Bankers turned their backs on him—jobbers slipped him the yes, we'll advance you no credit—and

Why he was trying to buy himself out of the business. And—any men who share Louie's views are wrong.

They are as wrong as a wrong number—as wrong as a last month's transfer—as wrong as near beer and—

If they persist in holding these opinions, they are paging poverty, signaling the sheriff to foreclose them and calling for Katy Calamity to come; and—

Because I know I am right and Louie et. al. Louies are wrong, I hereby take up the gavel, pound for order and rule the contrary-minded out of the—

Electrical League for Enlightenment.

Japan's First Electric Home Is Being Built in Tokyo

By F. D. FAGAN
Advisor to Tokyo Electric Company

The erection of the first electric home in Japan, plans for which were made by a committee appointed by the sales manager of the Tokyo Electric Company, has been under way for several months and is to be completed Sept. 20. The home is a six-room Japanese and foreign style building and is located in one of the exclusive suburbs of Tokyo.

The work of securing cooperative effort to arrange for the home was undertaken by the central station committee and as there was no organized association in the city a real estate company, building company, department store, electric railway company, electrical manufacturing company and a lamp company agreed to build and furnish the home. Building of the home was started in June of this year and during the early stages of construction, on the day that the rafters supporting the roof were put in place, the Japanese ceremony of blessing the home was conducted by a Shinto priest.



Lighting Campaign Plans Formed by San Diego Club Men

Organization of a local committee in San Diego, Calif., to cooperate with and further the Home Lighting Educational Campaign was perfected through the San Diego Electric Club at its meeting on Aug. 19. The action was taken following a meeting held with representatives of the electrical industry of San Diego the week previous during a brief visit to the city of J. M. Hickerson, representing the national organization of the campaign.

To hear Mr. Hickerson explain the general scheme of the campaign, and to have the plan for organization outlined, a group of about twenty representatives of the contractors, dealers and central station were called together by A. E. Holloway, Aug. 13. Mr. Hickerson was not able to remain over in San Diego until the next meeting of the Electric Club.

Accounting Problem Questions Answered by Expert

The Journal of Electricity has made arrangements with F. V. Mitchell, public accountant of San Francisco, to answer, in these columns, such questions as may be asked on accounting. All readers are invited to forward their inquiries to The Editors, Journal of Electricity. The answers will be published as soon as possible following the receipt of the inquiry.

Question:

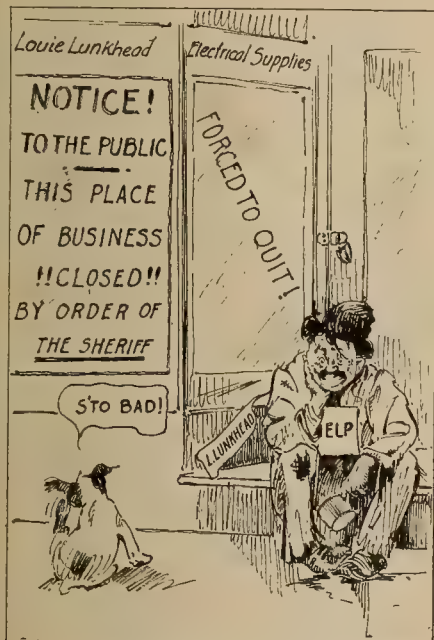
How should the proprietor's drawings be treated on the books?

Answer:

A journal entry should be made debiting expense and crediting the proprietor's personal account with a reasonable salary allowance monthly, and all withdrawals charged against this personal account. If the proprietor draws a regular monthly salary in cash, this amount can be debited direct to expense and no journal entry is necessary.



Shinto priest blessing first Japanese electric home and the home as it appeared in later stages of construction.



Louie finally does some advertising.

this here, now, white space. It is money like throwin' it in the bay.

"When I get the glue, I keep it, and some day, when I have enough, I'll buy myself out of this business and go into a game where a man can make a livin'."

Then, Mister Lunkhead was aimed for an exit and the meeting was resumed.

Louie, like many others in the electrical industry, refused to believe that advertising or not is merely a question of moving merchandise or not—and—

ELECTRICAL CONTRACTORS AND DEALERS

Santa Cruz, California—September 19, 20, 21, 1924

JOBBER, DEALER AND SALES AGENT



Helping the Industry to Sell Modern Lighting

Seventy-Seven Men Learn Fundamentals of Selling Lamps and Lighting in Ninth Illumination Design Course

By ROY A. PARKER
National Lamp Works of General Electric Company

"Know your stock!" is the advice that the sales manager of a large retail establishment has been giving to his salesmen for over a period of ten years. It is this man's opinion that the first requirement of the salesman is that he be thoroughly acquainted with the things he hopes to sell to the customer.

The selling of electrical devices is a fairly technical pursuit and consequently the salesman must have a comprehensive understanding of his product. He must be exceptionally well acquainted with the applications of his devices and must also be prepared to assist the customer in fitting the equipment to the particular need.

One of the fields in which sales managers have not had opportunity to give complete information to their salesmen is that of commercial and industrial lighting. The field is becoming a highly technical one and it is necessary that adequate information be in the hands of the men that meet the public in an effort to sell this class of merchandise.

To aid in the education of men that are interested in the sale of better lighting installations, the National Lamp Works of the General Electric Company, in June, 1921, started at Nela Park, Cleveland, Ohio, what is known as the "Illumination Design Course." This course is open to all persons engaged in the illuminating industry.

Those in attendance at these schools knew that there is more to the lighting business than the mere selling of lamps. They knew that if they were qualified to design and specify good lighting for a customer instead of selling lighting equipment for a hit-and-miss installation, they would increase their sales and build the good will of their customers. They knew that if they understood the fundamental principles in the procedure of selling lighting they would again add to their ability to increase sales.

The course is given periodically three times a year. Lectures and demonstrations covering theory and principles of lighting are given by recognized authorities in each field. Typical factories, offices and stores are visited and lighting layouts are designed for them. Theory and practice are thereby joined to give a thorough training to the student. Street lighting, sign lighting and automobile lighting are also studied and demonstrated.

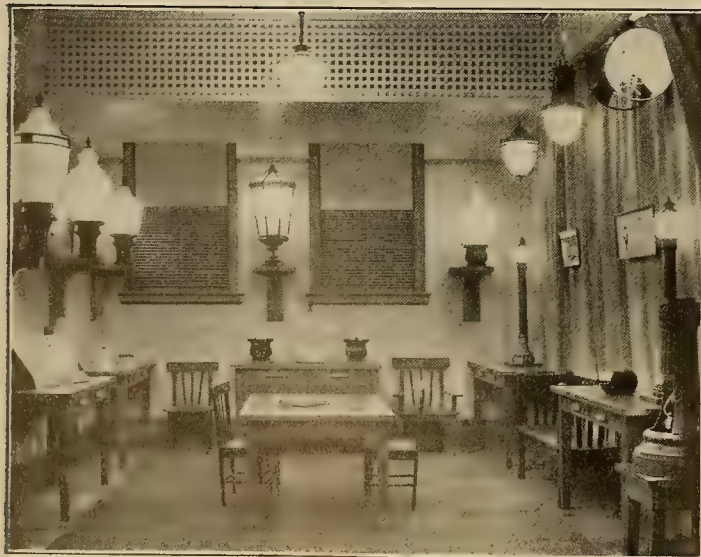
Having obtained a working knowledge of illumination, the student has effective sales ammunition at his command. Lectures embracing merchandising principles, advertising, and selling are given to the student. These talks show the student how to use the sales ammunition that he has acquired. Contracts, sales rules, surveys of the various markets and the methods of de-

veloping them are discussed in lectures with a view to aid every man expand his business.

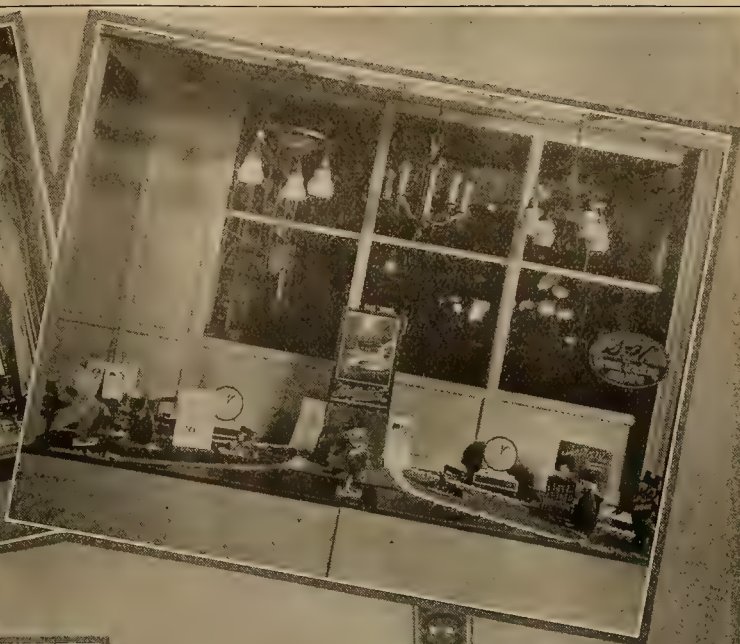
The newly completed demonstration rooms at Nela Park were used for the first time by this school. The demonstrations in these rooms helped those attending the course to visualize the facts and principles brought out in the lectures.

The entrance to the demonstration rooms leads into a reception room or lounge. Adjoining this room is a class room which is equipped with special demonstration lighting fixtures, a stage for demonstration purposes, tables equipped with individual drawers for each student's books, papers and working materials, and demonstration booths along the sides of the room showing the most up-to-date lighting equipment. Individual rooms containing equipment for the demonstration of industrial lighting, home lighting, street lighting, automobile lighting, show window lighting, sign lighting and sales helps enable the visitors to obtain in a short time a most comprehensive idea of the modern methods of lighting and the benefits from good lighting as contrasted with bad lighting.

Two schools, similar in character to those at Nela Park, are to be conducted in California by the Lighting Bureau of the Pacific Coast Electrical Association within the next month. The first group of men will receive instruction at a school to be held in the auditorium of the Pacific Gas and Electric Company Building in Oakland, Sept. 22-26, and the second course will be given in the Contractor-Dealers' Association Building in Los Angeles, Sept. 29-Oct. 3.



Street lighting demonstration room and the reception room at the Nela Park demonstration quarters. Individual exhibits are provided for demonstrating various classes of illuminating equipment.



WESTERN dealers in electrical appliances have been among the most enthusiastic supporters of national campaigns sponsoring various electrical devices. During Hotpoint Window Display Week, featured by the Edison Electric Appliance Company, many of these dealers devoted their windows to the exclusive display of this line. Five of the windows are reproduced on this page. Reading from left to right and top to bottom the windows are those of: Hamburger's, Los Angeles; Coltonan Electric & Manufacturing Company, San Francisco; Wilson Electric Company, San Francisco; Valley Electrical Supply Company, Fresno; and Union Electric Company, Pasadena. Over five hundred California dealers participated in the window decorating campaign.



INDUSTRIAL NEWS



Public Ownership Bill May Be Presented in Oregon

To bond the State of Oregon and put it into the business of generating and selling electrical energy is the aim of a constitutional amendment that may be submitted to the state legislature which will convene early next year. A committee of eight from the Public Ownership League, which was organized in Portland about a year ago under the auspices of the Public Ownership League of America, is reported to have drawn up the amendment. The advocates of the measure state that if the amendment is submitted to the legislature and that body does not introduce it for preliminary consideration, or in any manner changes its provisions, it will be withdrawn and placed on the 1926 general election ballot by initiative petition. The intent of the bill is declared to be to conserve, develop and control the waters of the state by publicly owned utilities.

A board of five to be elected by the people and to serve without compensation would administer the provisions of the Act. The board is given power "to issue and sell bonds, to construct or acquire by purchase, lease or condemnation, gift or other legal means, water, water rights, easements, or electrical energy, and to construct and operate works, dams, reservoirs, power houses, transmission lines, structures, roads, railroads and any other property necessary or convenient for the purpose of the act." It is provided, however, that no plant shall be purchased for a consideration of more than \$500,000, until such purchase shall have been approved by a vote of the majority of the legal electors of the state or political subdivision thereof at a general election.

A revolving fund of \$5,000,000 is provided which would be used to defray the expenses of acquisition, construction and operation and maintenance of projects undertaken by the board. If at any time the revenues from projects are insufficient to pay the interest and principal on outstanding bonds the board may issue and sell bonds to meet such payments. The board would have full power to establish rates for service which in its judgment would provide for all operating expenses and interest and principal on bonds and retire the investment in a project in fifty years. The state and political subdivisions are given a preferential right to water and electric energy controlled by the board as against privately owned public utilities selling water or electric energy to the public.

In any proceeding in eminent domain brought by the board the determination of the board that the taking of the property described in the complaint is

necessary shall be conclusive evidence of such necessity. In any proceeding the state may take immediate possession and use of any property deemed necessary by paying into court such amount of money as the court may determine as reasonably adequate to secure to the owner immediate payment of just compensation for such taking and damage incident thereto.

Court Denies Injunction to Stop Work on Municipal Plant

A temporary injunction sought by the Colorado state utilities commission, restraining the City of Loveland, Colo., from continuing its work on a municipal plant, was denied by Judge George H. Bradford of the district court at Fort Collins, Aug. 26.

The City of Loveland, Mayor W. E. Banks, members of the city council, the contracting firm doing the work, and the Hendrie & Bolthoff Manufacturing & Supply Company of Denver, were named as defendants. Previously Wayne C. Williams, attorney-general of Colorado, refused legal aid and denied the right of the commission to engage attorneys with which to institute action against the defendants.

It is not known whether the matter will now be taken into the federal courts or whether the differences between the municipality and the Public Service Company of Colorado will be settled by arbitration. Disposition of the distribution system owned and operated by the latter company is the principal subject of concern.

Date Fixed for Hetch Hetchy Bond Election.—Oct. 7 has been fixed by the San Francisco Board of Supervisors as the date of the special election on the proposed \$10,000,000 Hetch Hetchy bond issue (Journal of Electricity, p. 184, Sept. 1, 1924). Of this amount \$8,000,000 is to cover the cost of driving the 17-mile tunnel from Moccasin Creek into the San Joaquin Valley, and \$2,000,000 is allotted to shafts and other preliminary work on the 31-mile tunnel yet to be driven through the Coast Range Mountains separating the San Joaquin Valley from San Francisco Bay. Neither the cost of the Coast Range tunnel nor the 45-mile pipe line across the San Joaquin Valley is included in the forthcoming bond issue.

El Paso Electric Railway Employees Hold Picnic.—The annual "Fall Round-Up" of the El Paso (Texas) Electric Railway Company employees was held at West Ysleta Country Club, El Paso, on Sept. 5. The picnic was featured by various races and ended with moving pictures and dancing.

Files Argument Against Proposed Water and Power Act

State Senator Arthur H. Breed of Alameda County, Calif., has filed with the California Secretary of State an argument against the proposed Water and Power Act. In accordance with the law, it will be made a part of the biennial booklet on proposed new laws sent to all voters in the state prior to election. The argument follows:

The pending water and power constitutional amendment is the same measure which the people rejected two years ago by a majority of nearly 354,000.

It pledges the state's credit to an issue of \$500,000,000 of tax-free state bonds. A board of five persons, appointed by the governor, would spend the money in acquiring, operating and maintaining such water and power projects as it deemed necessary or convenient.

This political board would operate the projects from Sacramento, fix rates and determine conditions and quality of service, all without regulation by the Railroad Commission. Consumers and communities would thus be at the mercy of five politicians with a virtually unrestrained control of industry. Should incorrect estimates, inadequate service or political mismanagement prevent projects from paying expenses or meeting interest charges or requirements for repayment of principal out of rates, explicit provision is made to meet deficits and losses out of the general funds of the state.

The board is empowered to appoint such employees as it may require and fix their compensation. These employees are exempted from the state civil service law, so that the board can build up a great political machine through patronage.

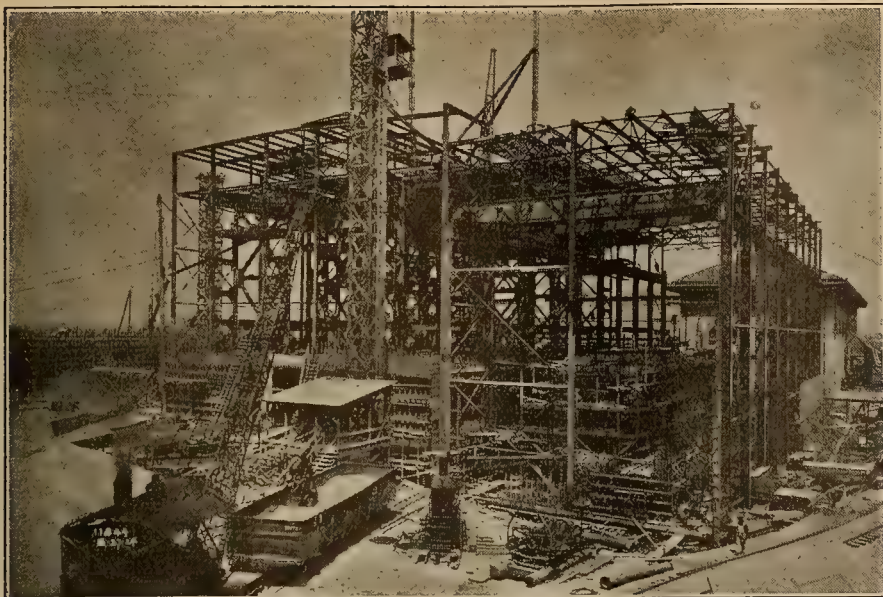
This year advocates of the measure seek to take political advantage of the drought by masking the water and power amendment as a water conservation plan, but public ownership will not increase rainfall. Behind the existing dams the storage basins are almost dry. What California needs is more rain, not more empty reservoirs.

There is no public need for the state to embark in the power business and no good reason for adding half a billion dollars of tax-free bonds to the huge volume of such securities outstanding. Many advocates of the water and power measure, undismayed by the failure of North Dakota in the wheat and banking businesses favor the Act as a first step in California toward the taking over by government of essential industries and the redistribution of private wealth through taxation. There is no more reason why the state should adventure into the power business than into the flour or automobile business.

Less than fourteen years ago the state undertook effective regulation of public utility companies. As a result the rates, investments and service of such companies are now controlled by a public agency. To scrap the policy of regulation and substitute public ownership would be unjust and foolish. Even those who assert that regulation has failed cannot logically offer as an improvement a new commission appointed like the Railroad Commission by the governor and given the insufficiently restricted power of expending the taxpayers' money and hiring armies of employees.

Private initiative and effort developed California. Political management is usually wasteful and inefficient, and to compel taxpayers to provide enormous amounts of borrowed money for the financing of unspecified ventures by a political machine would be to invite disaster.

The voters should rebuke by a majority larger than before the restless agitators who refuse to accept the decision of the people so emphatically expressed. Repeated submission of such measures is a public nuisance and tends to bring the initiative into disrepute.



Long Beach steam plant of the Southern California Edison Company as it appeared Aug. 27, 1924.

Long Beach Steam Plant Unit Received in Record Time

Breaking all previous records for transcontinental freight shipments by over two days, a special trainload of 22 cars of electrical equipment for the Long Beach steam plant of the Southern California Edison Company arrived in Los Angeles on Aug. 31, after being en route from Schenectady, N. Y., 7 days, 18 hr. and 40 min. The equipment for the 100,000-hp. addition to the Edison company system which included the largest steam generating unit ever shipped west of Chicago, left the factory of the General Electric Company 9 weeks ahead of schedule and will be in service some time during November of this year. It was originally planned to place the unit in service Feb. 1, 1925. The plant is being rushed to completion to relieve the power shortage in southern California.

In endeavoring to speed up the trip across the continent, the General Electric Company sent a personal tracer along with the train. Excellent cooperation was received from the railroad companies and when the train arrived at Power, the site of the new plant, Southern California Edison Company crews were ready to unload the equipment.

Close co-ordination throughout the plants of the General Electric Company made possible the delivery of the equipment in record time. When the contract was signed in January, promise of shipment was made for October. Work in the company plants was speeded up so that on Aug. 23 all of the apparatus had been received at Schenectady and the special train was started from there that night.

The equipment shipped included the following: one 35,000-kw., 1,500-r.p.m., 11,000-volt, 50-cycle turbo-generator; one 2,800-kw., 1,500-r.p.m., 2,300-volt, 50-cycle generator; one 45-kw. direct-connected exciter; two motor-operated field rheostats for main and auxiliary generators; five 100-hp. and five 150-hp. motors; one solenoid-operated field rheostat for exciter; three 73,000-volt, 400-amp. oil circuit breakers; six 13,500-kva., 50-cycle, 72,000-4,100-600-11,000-volt transformers; one 350-kw. motor-

generator set and other auxiliary equipment.

Stone & Webster, Inc., under whose direction the \$10,000,000 plant is being constructed, is also rushing work on the structure. At the present time over 1,000 men are being employed on the project in order that the new unit may be put in service at an early date.

Rocky Mountain League Appoints Lighting Contest Board

The Rocky Mountain Electrical Cooperative League is sponsoring the Better Lighting Contest that is being promoted nationally under the direction of the National Electric Light Association and the Society for Electrical Development. A committee has been appointed to handle the details of the contest in the Intermountain territory and plans are now under way for vigorously promoting the plan.

The committee personnel is as follows:

- C. Louis Collins, executive secretary, Rocky Mountain Electrical Cooperative League, chairman.
- E. E. Brazier, representing jobbers.
- S. Smith Stevens, representing manufacturers.
- J. V. Buckle, representing contractor-dealers.
- O. J. Hyde, representing Mountain States Telephone & Telegraph Company.
- M. L. Cummings, Jr., representing central stations.

City and Power Company Contest For Sultan River Rights

As a counter move in the conflict for water rights on the Sultan River, between the city of Everett, Wash., and the Sound Power Company, New York, the company has filed a protest in the office of Marvin Chase, state supervisor of hydraulics, against the application of the city for permission to use an additional 50 sec.-ft. The city already has a permit to appropriate 20 sec.-ft., and the protest claims that this is sufficient for the next fifty years, and that the additional filing is for political purposes.

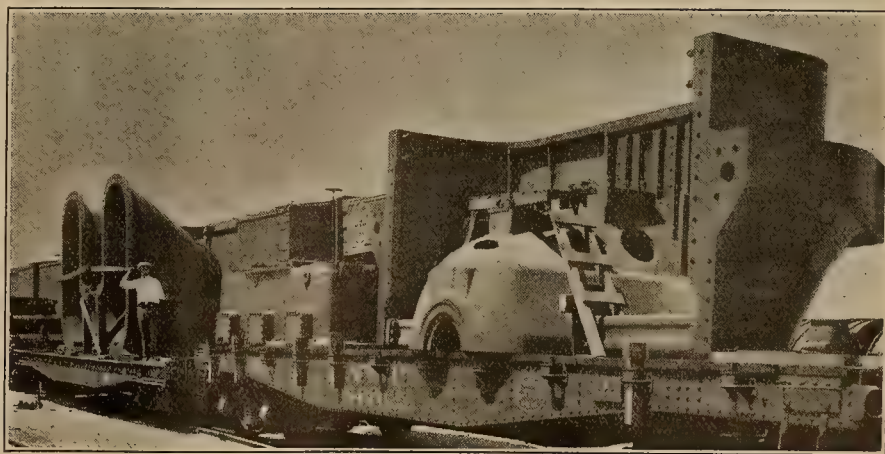
Recently the city entered protest against the granting of any further permit to the Sound Power Company to develop a hydroelectric project on the Sultan River, claiming that it needed all the waters of the river for domestic purposes. The protest was in the form of a resolution passed by the city council, addressed to the Federal Power Commission, setting forth the claim that, because the company has not carried on any development work since the granting of the temporary permit two years ago, it was not entitled to any extension of this permit. The resolution asserted that the city contemplated a \$1,000,000 improvement on the river for domestic water purposes in the near future.

Additional Power Site Applied for by Port of Kalama

In a supplemental application recently filed with Marvin Chase, Washington supervisor of hydraulics, the Port of Kalama, Cowlitz County, Wash., asks permission to divert 500 sec.-ft. of water from the Kalama River for the purpose of developing 11,350 hp. at a projected hydroelectric plant.

The application also asks for reservoir rights on a site capable of impounding 1,000 acre-ft. of water, which is to be used at a 250-ft. head. The water is to be conveyed to the power plant through a conduit line 7¼ miles long and the probable cost of development is placed at \$1,100,000.

The Port of Kalama has recently asked for tentative rights on several power sites adjacent to the city, intending to choose the most feasible later, according to report. It is understood that much of the power is to be used for operating a paper plant, the construction of which is under contemplation.



Base and shell of 35,000-kw. turbo-generator upon arrival at Long Beach plant.

Construction on Baker River Project Under Way

Stone & Webster Making Fast Time on Large Hydro Development
For Puget Sound Power & Light Company

Construction on the Baker River development of the Puget Sound Power & Light Company, Seattle, Wash., is being pushed along rapidly with 900 men employed on the river and 300 men on the substations and transmission lines, according to W. D. Shannon, general superintendent of Stone & Webster, Seattle, who has charge of the work. The initial installation is scheduled for completion in the fall of 1925 and is estimated to cost \$7,800,000.

A camp has been established at the site of the project near Concrete, Wash., just above the confluence of the Baker and Skagit Rivers, and a railroad has been extended from a connection with the Great Northern at Concrete, past the camp and on to the site of the dam.

A diversion tunnel, capable of carrying the entire flow of the river, has been drilled through a side of the canyon, and the stream was diverted through it around the dam site in August. Cofferdams are now being constructed above and below the site preparatory to unwatering the stream bed so that actual construction on the dam can be started. Loose material on the side of the canyon at the sites of the dam and power house has been washed down by hydraulic giants, and an incline railway has been built from a point a half-mile upstream from the dam for the purpose of bringing in sand and gravel for the concrete structures. This railway will be cable-operated and electrically driven.

The dam, which is to be built at a narrow gorge of the canyon, will be 245 ft. high, 180 ft. thick at the base, and 400 ft. long on the crest, and will contain 120,000 cu. yd. of concrete. Just above it, the Baker River flows through a flat valley, varying in width from one-half to one mile, which will be flooded by the impounded waters, creating a reservoir of about 70,000 acre-ft.

The main pressure tunnel, to carry the water of the reservoir to the penstocks, has been partly bored as a sec-

tion of the diversion tunnel. It will be 24 ft. in diameter and 1,300 ft. long, lined with concrete, and of a capacity sufficient to furnish the total expected development of 80,000 hp. Gates and rack bars will control the input at the head of this tunnel, and a surge tank will be installed near the lower end.

In the immediate development, two short steel penstocks, from the lower end of the pressure tunnel, will connect with two 20,000-hp. water wheels, of a make and design not yet determined, driving two 18,000-kva., 6,600-volt generators, likewise not specified as to make and design. The concrete power house will be laid out with the total possible future development in view.

Connection with the company's system will be made by 110-kv. line 25 miles west to a 13,500-kva. substation at Sedro-Wooley. From here the energy will be transmitted 25 miles to Bellingham at 60 kv., and south 45 miles to Everett at 110 kv., where a 27,000-kva. substation will be built. The Everett line is now under construction and will be operated at 60 kv. on completion about Oct. 1, to improve service in that vicinity. The other two lines will be constructed next year.

Offer Made for Colorado Springs Property Outside of City.—The Colorado Springs, Colo., city council has made an offer of \$800,000 to the Colorado Springs Light, Heat & Power Company for all of its property and rights outside the corporate limits of the municipality. This follows closely on the track of the agreement of the company to sell to the city its plant and distribution system within the city limits for \$600,000. In the meantime it is understood that the company is planning on concluding its commercial operations as soon as possible, regardless of the legal difficulties which yet remain to be settled before the city can take title to the system as approved at a special election several months ago.

Injunction Suit Filed Against California Power Company

Suit has been filed at Fresno, Calif., in the Superior Court against the Southern California Edison Company of Los Angeles, Calif., to enjoin temporarily that company from storing the waters of the San Joaquin River.

The plaintiffs, Amelita Herminghaus, Bertha G. Bottoms and Victoria Pearl Womach, own 17,000 acres of land lying along the San Joaquin River at its junction with Fresno Slough and covering twenty-two miles of river front. It is claimed that this land has riparian rights to the flow of the river. The holding has been leased for many years to the Miller & Lux Land Company, but it is claimed the lease does not affect the water rights.

In the course of the development of its hydroelectric projects on the headwaters of the San Joaquin River, the Southern California Edison Company has secured from the Miller & Lux company, which has large holdings of riparian lands on the river, its consent to the water storage. The plaintiffs claim that this agreement does not affect their interests, and allege that the storage by the Edison company, in its proposed hydroelectric development at Florence and Huntington Lakes and at other points on the upper reaches of the river, will damage their land by preventing "a very favorable overflow of water which has abundantly fertilized the land and take away water necessary for its irrigation when the land shall be intensively cultivated."

It is stated that this legal action comes after a year and a half of unsuccessful negotiation to effect a mutually satisfactory settlement, and the temporary injunction is sought until an agreement has been reached. The value of the land and water titles involved is claimed to be more than \$2,000,000.

Electric Utility Incorporated in Denver.—The Hydro-Electric Company has been incorporated in Denver, Colo., by three local men. The plan of the incorporators is to supply electric energy to ten Colorado counties, including Denver. According to Karl C. Schuyler, Denver attorney and one of the incorporators, the company owns water rights on two rivers, the two sites being capable of developing 54,000 hp. Frank M. McMahon, Denver business man, and G. A. Tass, electrical engineer, who built the Pikes Peak hydroelectric plant at Colorado Springs, are the other incorporators.

Albany Company Acquires New Property by Purchase.—Announcement has been made of the purchase of the properties of the Stayton Light & Power Company, Stayton, Ore., by the Mountain States Power Company, Albany, Ore. The rates of the selling company prevailing at Stayton have been adopted and made effective by the purchasing company. Though the exact point of contact has not been determined, it is stated that the Stayton system will be tied in with that of the Mountain States Power Company by an 11,000-volt line.

California Telephone Association to Meet at Santa Monica.—The California Independent Telephone Association is to hold its next meeting at the Athletic Club, Santa Monica, Calif., Sept. 25-26.



South portal of diversion tunnel at site of Baker River plant of the Puget Sound Power & Light Co.

Electrification of Oregon Farms Surveyed by Committee

The rural electrification survey in Oregon, announced at the Northwest Electric Light and Power Association convention in June, is well under way. The work is being carried on by F. O. McMillan, professor of electrical engineering, and W. J. Gilmore, agricultural engineer, both of the Oregon Agricultural College, Corvallis. These men were appointed by the Oregon committee on the relation of electricity and agriculture.

The intent of the survey is to find out to what extent the farms in Oregon are electrified and what use is being made of electric service. Data are being gathered on the number of lamps used, the amount and kind of motor load, the number of kilowatt-hours consumed per customer, and the inventory of various rural lines. These data will facilitate negotiations between farmers and power companies for line extensions in the future, since they reveal average conditions in several typical farming communities in the state.

Surveys have been conducted near Jefferson in the Willamette Valley, a general farming country served by the Mountain States Power Company; near Salem, Willamette Valley, general farming, served by the Portland Electric Power Company; near Hillsboro, Tualatin Valley, served by the Puget Sound Power & Light Company; near Astoria, general farming and dairying, served by the Pacific Power & Light Company; and near Tillamook, dairying, served by the Coast Power Company. A continuation of these surveys will be made in the Hood River Valley, fruit farming, served by the Pacific Power & Light Company; near LaGrande, grain and irrigation, served by the Eastern Oregon Light & Power Company; near Ontario, hay, grain and stock farming, served by the Idaho Power Company; and in southern Oregon, fruit and general farming, served by The California Oregon Power Company.

The plan of such a survey grew out of a meeting called by President W. J. Kerr of the Oregon Agricultural College, to cooperate with the activity initiated by the National Electric Light Association, and attended by a number of farmers, utility company represent-

atives and members of the staff of the college. At this meeting the Oregon committee was chosen, consisting of about forty members representing all the interests present. This committee chose from its members an active executive committee to be headed by J. T. Jardine, director of experiment stations of the college, and containing among others G. A. Palmiter, master of the state grange, R. H. Dearborn, dean of the college of engineering, Oregon Agricultural College, L. A. McArthur, vice-president and general manager of the Pacific Power & Light Company, A. C. McMicken, sales manager of the Portland Electric Power Company, and P. O. Crawford, vice-president and chief engineer of The California Oregon Power Company.

Annual Outing Held by Salt Lake City Electrical Industry

The annual "get-together" outing of the electrical people of Salt Lake City, Utah, and surrounding territory was held at Lagoon, a summer resort about fifteen miles north of Salt Lake City, on Aug. 19. The Rocky Mountain Electrical Cooperative League, which each year since its organization has conducted such an outing, had charge of the affair, and it was pronounced the most successful in the history of the industry in this section.

An entertaining program of varied events, which were participated in by men, women and children, furnished a good time for everybody during the afternoon. In the evening those present listened to an address by Lawrence W. Davis, manager of the Association of Electragists, International.

Some of the interesting features of the afternoon's program were the baseball game between delegations from Salt Lake City and Ogden, the men's bathing review and the ladies' bathing review, mashie approach (50 yd.) for men, and mashie approach (25 yd.) for ladies.

More than 300 members of the industry, with their families, were present at the picnic. The members of the committee in charge of the affair were: L. B. Johnson, General Electric Company; Geo. P. Trayner, Utah Power & Light Company; W. A. Moser, Westinghouse Electric & Manufacturing Company.

Annual Report Is Published by Denver Electrical League

The annual report of the Electrical Cooperative League of Denver, Colo., has been published and is in the hands of the members of the league. Included in the comprehensive report are summaries of the various activities engaged in by the league during the past year as well as plans for the coming twelve months.

According to the report the league staff has been active during the past year, 1,228 calls having been made on persons that had the ability to increase the electrical installations in Denver homes and buildings. The staff also prepared wiring plans for many installations and devoted attention to better commercial lighting. Results of the work are shown by the fact that the average number of outlets in all types of houses built in the city during the year ended June 30, 1924, was 25, whereas the previous year the number was 21.

The plans for the coming year include the assuming of leadership in the activity being sponsored by the Lighting Educational Committee; the forming of closer contact and cooperation with the electrical contractors; continued developing of better commercial lighting and the general developing of the electrical idea in the territory covered by the league.

City Wants to Sell Its Municipal Power Plant.—As a step toward culminating negotiations between the City of Scio, Ore., and the Mountain States Power Company, Albany, Ore., for the sale of the city's municipal power plant and system to the company, the city council has instructed the mayor to proceed with the necessary legal steps. The company has offered the city \$42,500 cash and certain street lighting concessions bringing the total consideration to about \$45,000. This offer is acceptable to the city council, but will have to be confirmed by vote of the people, and it is likely that a special election will be called for the purpose. It is understood that, if the deal is consummated, the power company will tie the Scio property in with its own system.



More than 300 people attended the annual picnic of the Salt Lake City electrical industry.

Present Status of Development of Skagit Project

Water Has Been Turned Into Tunnel and Construction on Crib Dam to Divert Flow from River Has Been Started

Shrouded in mystery, beset by mishaps and rumors of mishaps, threatened with lawsuits and investigations, the Skagit development of Seattle, Wash., is still unproductive at the time of going to press. President Coolidge was to have pressed the button on Sept. 1, but this act was delayed. In the meantime, water has been turned through the tunnel without the aid of the crib dam and the machines are being tested. Construction of the crib dam has commenced.

The Gorge tunnel situation has been complicated by the acceptance of the tunnel by the board of public works and the presentation by R. C. Storrie & Company, contractors on the tunnel job, of a bill of extras amounting to over \$600,000.

A resolution passed by the city council Aug. 21, urging the board of public works not to accept the tunnel, has further complicated the situation. The board already had accepted the tunnel on Aug. 9, though George F. Russell, chairman of the board, informed the council that this action would not bind the city to any course of action on the Storrie claim. However, a legal question has been raised as to whether or not the action of the board might be construed as a waiver by the city of several irregularities in the tunnel work. Hope was expressed that settlement of the claim might be effected without recourse to the courts.

The city council on Aug. 28 abandoned its proposed investigation into the responsibility for the 340-day delay in the completion of the tunnel. Counsel and witnesses for both sides were present when Chairman Russell of the board of public works informed the assembly that C. F. Uhden, engineer of the Skagit project, would not be present. He explained that Mr. Uhden was preparing a detailed report on each item of the Storrie claim, and that this report would be transmitted to the board through J. D. Blackwell, city engineer. He said that the board would consider the reports of both engineers, make such other investigations as it saw fit, and submit its recommendations to the council.

In a communication to the city council

Aug. 23, alleging weaknesses in the equipment of the Skagit plant, the Seattle Local Number 46 of the Electrical Workers' Union urged an investigation of the entire project and of the city light department by the department efficiency committee. Asking investigation of the light department, the communication asserts that "Local 46 feels that the engineering in connection with the plant is bad, the commercial conduct of affairs, scandalous, and the executive management, abominable." The communication was referred to the department efficiency committee.

Work on the crib dam, included as part of the initial Skagit development to aid in regulating the flow of water through the tunnel, has been commenced within the past month. Completion is expected in six to eight weeks, but operation of the plant will not be delayed on this account, it is declared. Some doubt has been voiced that this type of dam will not stand up under the freshets of the Skagit River. The next step in the complete development of the Skagit project calls for a masonry dam at this point 240 ft. high.

New Electric Repair Shop Put in Service at San Diego

The new electric repair shop of the San Diego Consolidated Gas & Electric Company, recently put in service, embodies several features of unusual construction and equipment. Perhaps the most notable of these is that the building and its transformer platform are designed with a view to doubling their size when the demands of the system call for additional capacity. The enlargement can be accomplished without disfiguring or disturbing the present layout.

The repair shop has been built on the west half of a small block. The building is 50 x 100 ft. in floor space, with a transformer platform of the same size adjoining it on the south. When the need for expansion is felt, the east end of the building will be opened and the walls extended another 100 ft., and the transformer platform will receive similar treatment.

Equipment of the shop consists of a traveling overhead crane in the shop

itself, a traveling gantry crane on the platform outside, in addition to a 6-ton electric hoist for use in loading. An electric and steam oven, for drying out transformers and motors, is also a feature of the new shop. An oil purifying set, consisting of a filter press and a centrifugal separator, has just been installed.

Test equipment includes a portable test set, for 2 kv. to 14 kv., and stationary sets to test from 2 kv. to 22 kv., from 2 kv. to 200 kv., a 200-kv. static voltmeter, and a portable oil test set for voltages up to 220,500. The switchboard equipment is designed for tests on 110, 220, and 440-volt circuits, either single or three-phase. It has a capacity of 50 kw.

New Distribution Cable Crosses Willamette River

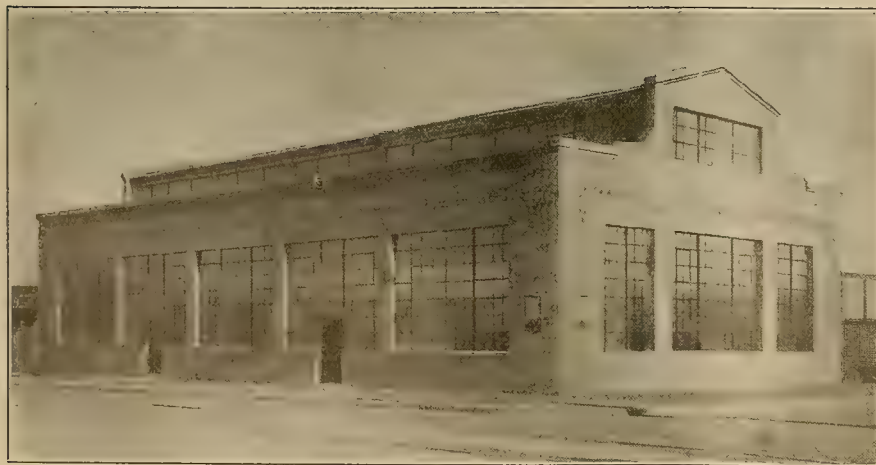
Preparing for increased demands, the Northwestern Electric Company, Portland, Ore., recently completed laying a new distribution cable to carry three-phase current at 11,000 volts across the Willamette River from the foot of Lincoln Street on the west side to connect with the Sellwood distribution circuits on the east side.

This cable, which is the fifth to be laid across the river by the company, also completes the 11,000-volt loop between the Albina substation and the Lincoln Street steam plant of the company. These stations, located in remote ends of the city, were formerly connected by only one line traversing the city on the west side through the Pittock Block station. The gap now is closed between the Lincoln Street station and the line extending through the city on the east side from the Albina station to the Sellwood district, thus securing greater stability to the continuity of service.

The cable is 1,400 ft. long, and, after the necessary preparations had been made, was laid on the river bottom in about twenty minutes with the aid of the cable barge of the Pacific Telephone & Telegraph Company.

Illinois Wire & Cable Company to Open Pacific Coast Plant.—Production of weatherproof wire and cable will be started at the new plant of the Illinois Wire & Cable Company, Oakland, Calif., on Sept. 15. The first unit of the company's Pacific Coast plant has recently been completed and is housed in a structure 320x80 ft. A. M. Mueller, Western manager for the company, has announced that Pacific Coast orders for weatherproof wire and cable will be handled through the new office.

San Joaquin River Watershed Permits Granted to Southern California Edison Company.—Eighteen permits covering hydroelectric developments in nearly the entire San Joaquin River watershed above the 1,000-ft. level, have been issued to the Southern California Edison Company by the California Division of Water Rights. These permits are in line with the company's extensive program of additional water power developments, the entire completion of which will require a continuous building program extending over a period of eighteen years. The program involves the expenditure of approximately two hundred million dollars.



The new electric repair shop of the San Diego Consolidated Gas & Electric Company, built so that the demands of expansion may be met by lengthening the building.

Municipal Hydro Development on Wynooche River Held Up

Blocked in its attempt to further its water and power project on the Wynooche River by the adverse decision of Judge Wilson of the Superior Court for Grays Harbor County, the city council of Aberdeen, Wash., has directed the city attorney to appeal the case to the State Supreme Court. Judge Wilson's decision, which was the outcome of a suit brought by Frank O. Dole, taxpayer, asking for an injunction restraining the city from going ahead with the project for which \$2,000,000 in bonds had been voted last December, stated that the plan of the project as outlined by the city contained two separate and distinct projects, one to provide domestic water and one to furnish light and power, which could not properly be joined under one bond issue as contemplated. Under the decision, the special election, in which the bond issue was approved by a majority vote, was declared invalid, and an injunction was granted restraining the city from further action on the project.

The special election was authorized by an ordinance outlining the project, which consisted of building a dam 240 ft. high across the Wynooche, tunneling $1\frac{1}{2}$ miles to the headworks of the present city water supply on the Wishkah River, erecting at the dam a power house and installing equipment capable of generating 34,000 hp., constructing a transmission line to Aberdeen and a substation and distributing system in Aberdeen, and providing for a bond issue of \$2,000,000 to furnish funds for the project. This ordinance was presented to the city council on Nov. 14, 1923, sixteen days before the date of the election, at the instigation of City Attorney Cross and other supporters, and at that same meeting rules were suspended and the ordinance was put through its final passage.

In the meantime the question of water rights on the Wynooche is being considered by the Federal Power Commission, having been presented to that body at a public hearing July 30, 1924, conducted by Philip H. Dater, district engineer of the Forest Service, Portland, Ore., the Forest Service having been brought into the matter by reason of the fact that the development lies within the Olympic National Forest. At this hearing, briefs were presented by the City of Aberdeen and by the Grays Harbor Railway & Light Company, Aberdeen, Wash., both of which are contesting for the site.

Prior state rights to the waters of the Wynooche for power development are owned by J. E. Malinowski, of Aberdeen, who filed in November, 1921, and received a permit from the state to develop the site. Later filings recorded are that of the Grays Harbor Railway & Light Company in August, 1922, and that of the City of Aberdeen in December, 1923. It is understood that Mr. Malinowski does not desire to develop the project, and, failing to sell his rights to the power company, is negotiating with the municipality for such sale.

The history of the agitation for the development of the Wynooche dates back several years. In March, 1922, the hydroelectric committee of the county council met with officials of the power company, and agreed to the company's

proposal for taking care of increasing power load by the installation of a 3,000-kw. steam unit in one of its existing plants. At the same time the company agreed to make investigations on the Wynooche, which was then thought to be the most practicable development nearby. In August, 1922, the company filed its application for water rights and commenced its investigations on the river extending over three months. In November, 1922, it placed in operation the 3,000-kw. steam unit, and in the summer of 1923 it continued its work on the Wynooche.

Pit 3 Tunnel Crews Advance One Heading 600 Ft. in August.—Crews working on Heading No. 1 and the Pit 3 tunnel of the Pacific Gas and Electric Company drove and completely timbered the tunnel a distance of 600 ft. during the month of August. This is regarded as notable in view of the fact that the tunnel is 22×23 ft. in size and that it was driven through three kinds of rock—tuff, agglomerate and seamy diorite. The total distance driven in August at all five headings was 2,375 ft. and it is now expected that the tunnel will be completed by Jan. 1 and that the plant can be put in operation by July of next year.

Bids for Narrows Span Received.—Preliminary examination of the fifteen bids received on the power transmission span across the Narrows of Puget Sound, between Point Evans and Tacoma, as part of the Lake Cushman power project under development by the city of Tacoma, showed that the low bidders on the three principal contracts were as follows: Ward & Ward, Tacoma, for foundation work; Pittsburgh-Des Moines Company, Seattle, for superstructure; Clyde Equipment Company, Seattle, for cable. Work of itemizing the bids and completing their tabulation is under way, but will require a little time before the awards are made. The bids ranged from \$261,000 to \$350,000, all exceeding the original estimate of \$250,000.

Books and Bulletins

PRACTICAL CALCULUS FOR HOME STUDY

By CLAUDE IRWIN PALMER. 443 pages, 186 figures. \$3. Published by McGraw-Hill Book Company, Inc., New York, N. Y.

To write a book covering the principles of the calculus as applied to practical engineering problems is quite a task, but to attempt to write such a book so that the subject may be mastered by home study without the aid of an instructor is indeed a real undertaking.

According to the author, who is associate professor of mathematics at the Armour Institute of Technology, "Many men without college training have need for a working knowledge of the calculus and its practical applications, but there has been no book available that could give them the essentials of the subject without the assistance of an instructor."

This book aims to give the man who

has a limited mathematical training the ability to make use of the calculus as he needs it in his work. It is intended further to be an extension of the author's "Practical Mathematics" published a few years ago.

In the section immediately following the preface and entitled "A word to the student," the author gives a bit of sound advice to those who attempt to master the calculus. Among other things he says that the thing to be desired is for one to appreciate what calculus really is, to understand its fundamental principles and to realize what a powerful tool it is in formulating the laws of nature. And also—"One should not allow himself to be lured on merely because a subject is represented as easy; but he should assure himself that every problem he attacks, . . . has a useful purpose, in that it will contribute in some measure to the perfecting of his mathematical equipment. The subject of calculus cannot be made easy, but it can be made plain."

The book then starts with a chapter on Fundamental Ideas followed by chapters on Limits, Derivatives, Curves and Their Equations, Maxima and Minima, Differentials, Rate of Change, Integration, Trigonometric Functions and Three Important Types of Functions. In the last named chapter under the section devoted to the periodic functions an excellent example is given of the care used by the author in preparing the student's mind for the subject which is to be treated. In this particular section the statement is made:

"In nature there are many motions that are recurrent. Sound waves, light waves, and water waves are familiar examples. Motions in machines are repeated in a periodic manner. The vibration of a pendulum is a simple case, as is the piston rod motion in an engine. Other familiar illustrations are the vibration of a piano string, breathing movements, heart beats, and motion of tides. An alternating electric current has periodic changes. It increases to a maximum value in one direction, decreases to zero and on down to a minimum, that is, to a maximum value in the opposite direction, rises again, and repeats these changes."

Chapters then follow on Curvature, Methods of Integration, Plane Areas, Arc Lengths, Partial Integration, Double and Triple Integration, with the Applications of Integration. The book concludes with chapters on Series, Analytic Geometry, and answers to the problems given throughout the book. The diagrams are clear and well drawn, and in keeping with the lucid explanations of the text.

For the student who is seeking to expand his knowledge of mathematics and for the engineer who would like to keep from getting rusty on his calculus, a text book such as this should be most welcome and useful.

E. R. S.

Bulletin on Self Corrosion of Lead Cable Sheath Published.—The Engineering Experiment Station of Purdue University has recently published Bulletin No. 18 which is entitled "Self Corrosion of Lead Cable Sheath." The booklet was written by F. O. Anderegg and R. V. Achatz and covers various experiments conducted under the direction of the two professors.

Meetings

Plans Made For Pacific Coast A.I.E.E. Convention

Plans for the Pacific Coast convention of the American Institute of Electrical Engineers have been formulated by the committee in charge and a tentative list of technical papers has been prepared. The convention is to be held at Pasadena, Calif., Oct. 13-17, and indications are that it will be one of the most successful ever held. A large number of engineers and pioneers of the electrical industry from the East will attend the convention in a party and will make the trip in special cars, visiting points of interest en route. The tentative program of papers is as follows:

Transmission

- The Hysteresis Character of Corona Formation, Prof. H. J. Ryan and H. H. Henline, Stanford University.
- Corona Losses between Wires at High Voltage, C. Francis Harding, Purdue University.
- Corona-Loss Tests on 202-Mile, 220-Kv. Transmission Line, Roy Wilkins, Pacific Gas and Electric Company.

COMING EVENTS

California State Association of Electrical Contractors and Dealers—

Annual Convention—Santa Cruz, Calif.
Sept. 19-21, 1924

Pacific Division, Electrical Supply Jobbers' Association—

Quarterly Meeting—Del Monte Lodge, Pebble Beach, Calif.
Sept. 25-27, 1924

Association of Electragists, International—

Annual Convention—West Baden Springs, Ind.
Sept. 29-Oct. 4, 1924

American Institute of Electrical Engineers—

Pacific Coast Convention—Pasadena, Calif.
Oct. 13-18, 1924

Illuminating Engineering Society—

Annual Convention—Briarcliff Lodge, Briarcliff Manor, N. Y.
Oct. 27-31, 1924

Commercial National Section, National Electric Light Association—

Hotel Rafael, San Rafael, Calif.
Nov. 19-21, 1924

- Corona Losses from Large Cables, J. C. Clark, Stanford University, and F. F. Evenson, Benson Lumber Company.
- Heating of Large Aluminum Transmission-Line Cables, R. J. C. Wood, Southern California Edison Company.
- Lightning, E. E. F. Creighton, General Electric Company.
- Lightning and Other Transients on Transmission Lines, F. W. Peek, Jr., General Electric Company.
- A New Type of High-Tension Insulator, H. B. Smith, Worcester Polytechnic Institute.
- High-Voltage Line Insulation, A. O. Austin, Ohio Insulator Company.
- Limitations of High-Voltage Transmission, H. H. Dewey and T. A. Worcester, General Electric Company.
- Transmission at 220 Kv. on Southern California Edison System (composite paper by members of Southern California Edison Company):
Section 1. Description of System and Operating Experience, H. Michener.
Section 2. Protective System, E. R. Stauffer.
Section 3. Economic Studies in Transmission-Line Design, W. D. Shaw and C. B. Carlson.
Section 4. Vibration of Conductors and Overhead Ground Wires, J. M. Gaylord.

Section 5. Location and Right of Way, V. D. Elliott.

- A High-Voltage Wattmeter, P. C. Clark and C. E. Miller, Stanford University.
- Power Measurements at High Voltages and Low Power Factors, J. S. Carroll, T. F. Peterson and G. R. Stray, Stanford University.

Machinery

- Large Steam-Turbine Generators, W. J. Foster, E. H. Freiburghouse and M. A. Savage, General Electric Company.

Operating Practice

- Operating Features and Technical Problems Associated with Interconnected Systems, W. E. Mitchell, Alabama Power Company.

Research and Electrophysics

- (The eight papers following are by members of Norman Bridge Laboratory of Physics, California Institute of Technology.)
Influence of Temperature on Photo-Electric Emission, R. C. Burt.
Collisions of the Second Kind, Stanislaw Loria.
Electric Currents Due to Fields Alone, S. S. MacKeown.
Electronic Orbits in Atoms, R. A. Millikan and I. S. Bowen.
Transfer of Radiant Energy to Free Electrons, E. C. Watson.
Electronic Emission under the Bombardment of Positive Ions, A. L. Klein.
A Magnetic Lens, W. R. Smyth.
A Complex-Quantity Slide Rule, J. W. M. Du Mond.
A Method of Obtaining Steady High-Voltage D.C. from a Thermionic Rectifier without a Filter, F. W. Maxstadt, California Institute of Technology.

Utilization

- Electrical Applications to Irrigation Pumping, R. H. Cates, Southern California Edison Company.
- Electricity in the Cement Industry, Mr. Arnold, Southwestern Portland Cement Company.
- Electric Power Application in Fir Mills, J. L. Wright, General Electric Company.
- Electricity in Mines, F. L. Stone, General Electric Company.
- Contribution of Electricity to the Steel Industry, K. A. Pauly, General Electric Company.
- Electrical Equipment of Consolidated Mining and Smelting Company's Zinc Plant, R. H. N. Lockyer, West Cootenay Power Company.
- Electrometallurgical Applications, J. L. M. Yardley, Westinghouse Electric & Manufacturing Company.

Telephony and Telegraphy

- Guided and Radiated Energy in Wire Transmission, J. R. Carson, American Telephone and Telegraph Company.
- Telephone Transmission Maintenance Practices, W. H. Harden, American Telephone & Telegraph Company.
- Telephone Line Balance, L. P. Ferris and R. G. McCurdy, American Telephone & Telegraph Company.

Illumination

- Street Lighting, R. D. Whitney, Syracuse University and Syracuse Bureau of Gas and Electricity.
- Entertainment of members and guests in attendance at the convention has been arranged and numerous trips from Pasadena to points of interest have also been scheduled. Included in these trips is one to the observatory on Mount Wilson.

Public Relations Committee of P. C. E. A. Meets in San Francisco.—Plans for the activities of the Public Relations Committee of the P.C.E.A. for the coming year were outlined at the initial meeting of that committee held at the Palace Hotel, San Francisco, Aug. 29. At the meeting various suggestions for the maintaining of public relations were presented and discussed. The next meeting of the committee will be held in Los Angeles in November, the definite date not being determined.

P.C.E.A. Technical Executive Committee Holds Meeting.—Organization of the 1924-25 Technical Section of the P.C.E.A. was discussed at the first meeting of the Technical Executive Committee held at the Palace Hotel, San Francisco, Aug. 6. Sixteen members of the committee were in attendance and at that time the section's activities for the coming year were out-

lined. Subjects for the consideration of the various bureaus of the section were considered and bureau chairmen were appointed by P. O. Crawford, of The California Oregon Power Company and chairman of the section. A joint report involving power station arrangement was proposed and was received with general approval. This report is intended to cover lists of equipment entering into modern stations and is to be prepared by the Prime Movers, Apparatus and Hydraulic Power Bureaus. The next meeting of the Technical Section is to be held in Los Angeles, Sept. 17-19, instead of Sept. 18-20 as was announced on page 185, Journal of Electricity, Sept. 1, 1924.

P.C.E.A. Purchasing and Stores Section Holds Organization Meeting.—Eleven members of the Purchasing and Stores Section of the P.C.E.A. were in attendance at the organization meeting of that section, held in the Edison Building in Los Angeles, Calif., on Aug. 15. At that time H. O. McKee, chief traveling storekeeper, Southern California Edison Company, and chairman of the committee, presented to the membership a booklet containing a list of subjects that might be discussed at the section's meetings together with a brief outline for the preparation of papers under

COMING PACIFIC COAST ELECTRICAL ASSOCIATION MEETINGS

Technical Section—

Southern California Edison Building,
Los Angeles, Calif.
Sept. 17-19, 1924

Executive Committee, Commercial Section—

Los Angeles, Calif.
Oct. 17-18, 1924

Power Bureau—Technical Section—

Los Angeles, Calif.
Oct. 17-18, 1924

Executive Committee, Commercial Section—

San Francisco, Calif.
Nov. 19-21, 1924

Purchasing and Stores Section—

Del Monte, Calif.
Nov. 20-21, 1924

Power Bureau—Technical Section—

San Francisco, Calif.
Nov. 20-21, 1924

each subject. Members of the committee were appointed to the various subcommittees and were asked to prepare papers upon the subjects assigned. Following the meeting the membership made a trip of inspection to the new general store of the Edison company at Alhambra. The next meeting of the section will be held at Del Monte, Nov. 20-21.

Rocky Mountain Division of N.E.L.A. Holding Convention.—A number of new features are promised at the convention of the Rocky Mountain division of the National Electric Light Association now being held at Glenwood Springs, Colo., according to telegraphic reports from the publicity committee. One record has already been broken and that is the number of registrations prior to the opening of the convention. Better lighting is one of the chief subjects on the convention program.

Manufacturer, Dealer and Jobber Activities

Western Electric Company at New York has recently opened a branch office at Davenport, Iowa. E. L. Johnson has been appointed manager of the Davenport branch and D. O. Manix stores manager.

The Tri-State Electric Company, wholesale electric supplies, located at 108 Prefontaine Place, Seattle, has been taken over by the **Globe Electric Company, Inc.** The sale which involves all the interests of the Tri-State company means that the company's offices and shop will be closed, and the activities of the concern transferred to the Globe company's quarters at 312 Second Avenue.

Russell Electric Company, Chicago, Ill., has placed on the market two new curling irons, one with a rod $5\frac{1}{4}$ in. long and $5/16$ -in. in diameter, the other with a rod $6\frac{1}{2}$ in. long by $3/8$ -in. diameter. Both devices have a separable plug in the handle to permit of ease of operation.

The F. W. Wakefield Brass Company, Vermilion, Ohio, has issued a folder entitled "This Is All You Need" which is designed to emphasize the ease and simplicity of conducting a central station store lighting campaign. The booklet is devoted to an explanation of the plan developed by T. O. Kennedy, general sales manager of the Ohio Public Service Company, and outlines the ten essential steps in the campaign and gives examples of the inexpensive advertising material which has proved successful in the seven cities where this activity has been carried on.

The Cutler-Hammer Manufacturing Company, Milwaukee, Wis., has placed on the market a new combination pendant switch and receptacle that is designed for use with kitchen lighting units. The device is arranged to control the lighting unit and at the same time take any appliance. The two features are independent of each other, the receptacle being direct-connected so that whether the light switch is either on or off, any appliance may be plugged in and operated. The device is also adaptable for controlling commercial and industrial lighting units.

The Griscom-Russell Company, New York City, has recently published form sheet No. 195 devoted to the G-R Bentube evaporator which is designed for the production of pure distilled water for boiler feed make-up. A full description of the evaporator is contained in the sheet.

Allis-Chalmers Manufacturing Company, Milwaukee, Wis., has published Bulletin No. 1632-G covering "Centrifugal Pumps and Pumping Units." The booklet is replete with illustrations and descriptions concerning adaptations of the company's line of pumps in industrial and other plants. A complete description of the various types of pumping unit is also presented in the book.

The Esterline-Angus Company, Indianapolis, Ind., has published Bulletin No. 624 which deals with the operation of its multiple chart speed meters. Wiring diagrams showing the installation of the meters are also presented.

Morse Chain Company, Ithaca, N. Y., has recently prepared four publications dealing with Morse chains. One of the booklets gives a history of the application of power from the 17th to the 20th century, while the other three show pictorially applications of the company's line of power transmission chains.

Curtis Lighting, Inc., Chicago, Ill., has recently placed on the market two large-sized X-Ray reflectors designed to eliminate daytime plate glass reflections in show windows. The reflectors are designed to secure illumination of high intensity when used with the 500-watt Mazda lamp. The reflectors are designated as No. 900 X-Ray Giant and No. 910 X-Ray Leviathan.



Here we have the doughty "Mike" Scanlon, advertising manager of the Westinghouse Electric & Manufacturing Company, San Francisco, Calif., ready to throw the bull. Mike, who emigrated from East Pittsburgh to California about three years ago, looks like a "sure-nuff" vaquero.

Majestic Electric Appliance Company, Inc., San Francisco, has recently reduced list prices on Nos. 107, 108, and 111 Majestic electric heaters.

Wagner Electric Corporation has recently moved its San Francisco offices from 159 New Montgomery Street to 457 9th Street in that city.

The Poindexter Supply Company, for a number of years at 1440 Stout Street in Denver, Colo., has moved to the building of another jobber, the New England Electric Company, at 1591 Lawrence Street. Although the two firms are not merging it is understood that they will be closely co-ordinated.

C. A. Eastman, Pacific Coast representative of the Davis Sewing Machine Company, manufacturers of the Blue Bird washing machine, has recently moved his headquarters to 301 Times Building, Portland, Ore. The sales and service activities of the Blue Bird washer for the Pacific Coast are carried on from these headquarters.

The Lionel Corporation, New York City, has recently published its 1924-25 catalog of Lionel toy trains. The 44-page catalog is printed in four colors and gives a complete description of all toy trains manufactured by the company.

International Creosoting & Construction Company, Galveston, Texas, has prepared for distribution a 36-page booklet devoted to International pressure creosoted Southern Yellow Pine poles. The booklet is designed for users and presents in a most complete and accurate manner information and tabulated data on creosoted pine poles. Included in the booklet is a description of the processes involved in the preparation of creosoted poles. Numerous illustrations are used to enable the reader to visualize the operations. The tabulated data include information on the life of poles, physical properties of poles, standard pole volumes, and pole specifications. The booklet will be sent to interested parties upon request.

The Economy Fuse & Manufacturing Company has moved its district headquarters from Seattle, Wash., to Denver, Colo., with F. L. Easton in charge.

Pacific Electric Manufacturing Company, San Francisco, Calif., has recently published Bulletin 14000, which is devoted to a description of that company's line of high-tension switches known as Type 14000. The bulletin contains a full description of the parts and assembled switches of this design, together with illustrations showing various switches. Switch weights, dimensions, prices and general data concerning the Type 14000 switches are also presented in the booklet.

The General Electric Company has published Bulletin No. 48721 which presents pictorially examples of annealing of castings and wire, heat treating, calorizing, sherardizing and other processes using electric furnaces. The publication is mostly pictorial in content, illustrating the application of this type of heat to various operations in the plants of the General Electric Company. Details as to heat, dimensions and function of each installation shown are given in descriptive captions.

Westinghouse Electric & Manufacturing Company has recently developed a new reflector for use in industrial operation where a highly concentrated light is desired over a limited area. The reflector has been designed to give the maximum light distribution from a 25 or 50-watt mill type lamp, insuring a high intensity of illumination over the working area. In such work as machine sewing, coil winding, and other operations requiring accurate vision, the reflector is particularly suitable. The body of the reflector is a one-piece steel stamping to which is applied a ground coat of fired porcelain enamel and then a finishing coat of enamel, green on the outside and white on the inside.

Roller-Smith Company, New York, N. Y., has published Bulletins No. 160, No. 560 and No. 240. Bulletin No. 160 supersedes price sheet for Bulletin No. 160 and is devoted to the Roller-Smith type GSA, a.c. portable instruments. Included in this bulletin is a description of the new type GSA volt-ammeter that has recently been developed by the company. Type GSA wattmeter furnished for two-current capacity is also illustrated in the bulletin. Bulletin No. 560 supersedes the issue of that bulletin dated September, 1923, and is devoted to "Safety" circuit breakers of the enclosed Type P design and of the non-closable on overload Type E design. Roller-Smith precision torsion balances are described in Bulletin No. 240 which supersedes the issue of May, 1921.

Personals

Fred B. Lewis, who has for some time past been acting and assistant manager of operations of the Southern California Edison Company, Los Angeles, Calif., has been made assistant general manager of that company. Mr. Lewis started with the company immediately after his graduation in electrical



FRED B. LEWIS

engineering and has remained in the service for nineteen years. His work with the Edison company has been in various capacities and during the recent water shortage he has had part in the co-ordination of plans for the interchange of power. Mr. Lewis has been connected with many of the developments of his company and has taken an active part in system extensions.

R. F. Cole, for some time with the Economy Fuse Company as salesman in the Northwest territory, has left that company to become manager of the lamp department of Fobes Supply Company, Seattle, Wash.

S. W. Bishop, executive manager of the Denver Electrical Cooperative League, Denver, Colo., has returned from Association Island, N. Y., where he attended Camp Cooperation IV.

C. C. Shaw, of the Lalley Electric Company, Portland, Ore., was a recent visitor to San Francisco, Calif.

Murray Bourne, of the San Joaquin Light & Power Corporation, Fresno, Calif., was recently in San Francisco on business.

M. L. Brown, formerly with the Pacific Gas and Electric Company, San Francisco, Calif., as range and appliance salesman, has joined the staff of A. Strauch and H. V. Mooney, San Francisco. Mr. Brown will spend his time in the promotion of electric heating and cooking business.

H. F. Jefferson, until recently general manager of the Kilbourne & Clarke Manufacturing Company, 101 Spokane Avenue, Seattle, has severed his connection with that firm and established consulting electrical engineering offices in the Pacific Block.

Victor Hartley of the San Francisco office, California Electrical Cooperative Campaign, was a recent Los Angeles, Calif., visitor.

H. A. Storrs, chief engineer of the Modesto Irrigation District, Modesto, Calif., was a recent visitor to Oakland on business for the district. Mr. Storrs is interested in the negotiations now pending between East Bay cities and San Francisco for the use of Hetch Hetchy water.

C. H. Talmage, for over twenty-two years with the Western Electric Company and for some years sales manager for that company at Salt Lake City, Utah, and Kansas City, Mo., has resigned to locate in California. Mr. Talmage will doubtless remain active in the electrical field.

R. A. Balzari and "Steve" Gamble, of the Westinghouse Electric & Manufacturing Company, San Francisco, Calif., recently spent several days in Sacramento on business.

Frank Waxon, of Waxon Brothers, electrical contractors and dealers of Sacramento, Calif., recently returned from a two weeks' motor trip to Santa Cruz and other cities.

D. K. Rivas has been made manager of the New York City office of the Wagner Electric Corporation, St. Louis, Mo.

H. J. Van der Bijl, chairman of the electricity supply commission of the Union of South Africa, is in California studying electrical development in that state.

John G. Barry, vice-president of the General Electric Company, of Schenectady, N. Y., was in Salt Lake City, Utah, during the latter part of August, conferring with Robert Miller, manager of the Salt Lake City office of the company.

Walter Wurfel, of the Electric Supplies Distributing Company, San Diego, Calif., was a visitor in San Francisco and vicinity during the early part of September.

P. H. Booth, Pacific Coast district manager of the Edison Electric Appliance Company, Chicago, Ill., is attending a sales conference at the factory.

J. C. Douglas, representative in northern California and Nevada for the Edison Electric Appliance Company, Chicago, Ill., is attending a sales conference at the factory.

Carl Heilbron, president and general manager of the Southern Electrical Company, San Diego, Calif., was tendered a surprise party at a recent weekly sales meeting of the company. Eighty-five employees and about fifty members of their families gathered for an evening of dancing and entertainment which terminated with a midnight supper.

Willis R. Dunbar, formerly with the Westinghouse Electric & Manufacturing Company, San Francisco, Calif., and now with the Equitable Life Assurance Company, has just returned from an extensive trip East where he attended a conference of the company's representatives.

Walter B. Ford, formerly electrical inspector in the department of electricity, City of Los Angeles, has accepted a position as instructor of electricity and radio at the Le Conte Junior High School, Los Angeles, Calif.

B. C. Watts, of Denver, Colo., is on an extended trip to Victoria, B. C., and other Northwestern points.

K. E. Van Kuran, district manager, Los Angeles, Calif., office, Westinghouse Electric & Manufacturing Company, recently spent several weeks at Del Monte.

W. A. Jones, of Henry L. Doherty & Company, New York City, attended the annual convention of the Rocky Mountain division of the National Electric Light Association held at Glenwood Springs, Colo., Sept. 15-17.

R. F. Buckles, branch manager of the Westinghouse Lamp Company in Seattle, Wash., has been transferred to the San Francisco, Calif., office of his company. He will be succeeded by E. A. Irons, who has been connected with the company for several years.

M. P. Canon, of Latourrette-Fical Company, electrical contractors of Sacramento, Calif., recently returned from a three weeks' trip through Oregon, Washington and British Columbia.

Richard M. Boykin, manager southern division, Puget Sound Power & Light Company, with headquarters at Portland, Ore., will leave for Seattle, Wash., the latter part of September to assume the position of manager of the central division of that company. He succeeds D. C. Barnes, who has been made a vice-president of the concern. The central division is the largest of the company. Included in it, beside the city of Seattle and the surrounding territory, are the hydroelectric plants of the company at Snoqualmie Falls, White River, Electron and the new Baker River development now under construction, as well as two large steam plants, several substations and many miles of transmission and distribution lines. Mr. Boykin brings to his new field a broad experience in matters electrical. Since his graduation from the Alabama Polytechnic Institute with a degree in electrical engineering, he has installed motors in South Carolina cotton mills, worked about the power dis-



RICHARD M. BOYKIN

tribution systems of Nevada mines, and owned and operated an electrical system in Oregon. This system was merged with the Washington-Oregon Corporation, which later was reorganized as the North Coast Power Company and Mr. Boykin was made vice-president and general manager. When the Puget Sound Power & Light Company absorbed the North Coast company he was appointed manager of the southern district. In June of this year he was elected president of the Northwest Electric Light and Power Association (Journal of Electricity, issue of July 15, p. 74). Mr. Boykin has been prominent in the activities of the local section of the A.I.E.E. and has a wide acquaintance among the electrical fraternity.

George M. Rankin, field representative of the California Electrical Co-operative Campaign, recently spent a week in Sacramento making an electrical census.

George A. Campbell, of the Truckee River General Electric Company, Reno, Nev., was recently in San Francisco, Calif.

William F. Raber, for the past thirteen years general manager of the Southern Colorado Power Company, Pueblo, Colo., has been transferred by H. M. Byllesby & Company to take over the management of the San Diego Consolidated Gas & Electric Company, San Diego, Calif. Mr. Raber succeeds H. H. Jones, who recently was transferred to Minneapolis, and Gen. George H. Harries, who assumed temporarily the management of the San Diego utility. Born in Ohio in 1871, Mr. Raber has devoted practically all of his life to the utility business, having started with the Central Union Telephone Company in Ohio in 1891. After remaining with that company for some time, he went into the electric light and street railway business at Mansfield, Ohio, a property then operated by H. M. Byllesby & Company. He was soon promoted to be superintendent and later became general manager. He is the second oldest Byllesby manager in point of service, although one of the youngest in years. In 1905 Mr. Raber was sent to Enid, Okla., to manage the Enid Electric & Gas Company. After a year he was made general manager of the Ottumwa Railway & Light Company of Ottumwa, Iowa. From this position he was advanced in 1911 to vice-president and general manager of the Arkansas Valley Railway, Light & Power Company.



WILLIAM F. RABER

This company, on expansion to include Pueblo, the mountain and valley divisions, which had previously been separate organizations, was renamed the Southern Colorado Power Company. Mr. Raber was particularly active in civic affairs in Pueblo and southern Colorado, having been one of the prime movers in connection with the Colorado State Fair. He was president of the Pueblo Rotary Club, and an officer of the Pueblo Chamber of Commerce. When the disastrous flood of 1922 nearly wiped out the city of Pueblo Mr. Raber, as director of the "Committee of One Hundred," was one of the most energetic workers in the reconstruction and rehabilitation of the devastated region.

K. A. McIntyre, of the Society for Electrical Development, attended the convention of the Rocky Mountain division of the National Electric Light Association held at Glenwood Springs, Colo., Sept. 15-17.

R. G. Gentry, manager of the bureau of public relations of the Public Service Company of Colorado, Denver, Colo., is spending some time on the Pacific Coast.

David E. Drake, connected with the electrical industry for more than fifty years, has retired from active service with the Westinghouse Electric & Manufacturing Company after an association of thirty-four years. Mr. Drake began his work in electricity in the laboratory of Thomas A. Edison in 1871, later becoming manager of the Newark, N. J., office of the American District Telegraph Company. In 1880 he was made superintendent of construction for the United States Electric Company, which was later absorbed by the Westinghouse company. Since 1894 he has been connected with the sales department of that company, specializing principally in street railway and power work. In the earlier part of his career Mr. Drake made many pioneer installations, among these being the first arc lamps in New York, in 1879, the first electric lights in Newark, and the first arc lights in Chicago, both in 1880. At a luncheon given in his honor at the Railroad Club, by officials of the Westinghouse company and members of its sales department, a purse filled with gold was presented to Mr. Drake.

K. E. Van Kuran, Los Angeles, Calif., district manager of the Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., was recently in San Francisco. While in that city he attended a meeting of the Advisory Committee of the California Electrical Cooperative Campaign.

Ralph J. Cordiner, special representative of the Edison Electric Appliance Company, Chicago, Ill., visited Spokane Aug. 29, en route from Chicago to Portland, Ore.

A. Emory Wishon, vice-president and general manager of the San Joaquin Light & Power Corporation, Fresno, Calif., was recently in San Francisco on business for his company.

D. F. McGee, formerly chief engineer of the Pacific Power & Light Company, Portland, Ore., now of the executive department of the Electric Bond & Share Company, New York, recently visited Portland.

R. M. Townsend, property agent of the Portland Electric Power Company, Portland, Ore., attended the Oregon Irrigation Congress at Klamath Falls Sept. 5 and 6.

L. A. McArthur, vice-president and general manager of the Pacific Power & Light Company, Portland, Ore., attended the Oregon Irrigation Congress at Klamath Falls Sept. 5 and 6.

Franklin T. Griffith, president of the Portland Electric Power Company, Portland, Ore., is in the East for a few weeks on business for the National Electric Light Association of which he is president.

General George H. Harries, who preceded Wm. F. Raber as the temporary manager of the San Diego Consolidated Gas & Electric Company, San Diego, Calif., will remain on the Pacific Coast, having general supervision of Byllesby properties.

James M. Perlewitz, who was recently promoted to the position of sales manager in charge of the Salt Lake City branch of the Western Electric Company, was born in Lansing, Ill., Oct. 9, 1887. He was educated in the grade schools in Chicago and the high school at Pueblo, Colo., in addition to special private study. In 1906 he went to Salt Lake City and three years later entered the employ of the Western Electric Company in that city. In 1910 he was transferred to the Rocky Mountain Bell Telephone Company, and the following year went back to the Western Electric Company's Salt Lake City office. He



JAMES M. PERLEWITZ

left there in 1919 to enter the electrical business in Rexburg and Idaho Falls, Idaho. In 1922 he again returned to the employ of the Western Electric Company in Salt Lake City. His training has been largely along the line of handling sales work. On Aug. 1, 1924, he was promoted to his present position, to succeed A. J. Calloway, who was transferred to the company's Indianapolis, Ind., office.

Frank J. McEniry, formerly field representative of the Denver Electrical Cooperative League and recently appointed publicity manager of the General Electric Company's radio station at Denver, Colo., is spending some time at Schenectady, N. Y., preparatory to taking up his new work.

H. H. Courtright, manager of the Valley Electrical Supply Company, of Fresno, Calif., attended the recent meeting of the Advisory Committee of the California Electrical Cooperative Campaign held at San Francisco Aug. 29.

Obituary

Charles Brown, head engineer on the Hetch Hetchy project, was killed in an automobile accident on Sept. 2. Mr. Brown had been connected with the Hetch Hetchy project and San Francisco municipal engineering since 1921 and at the time of his death was resident engineer and superintendent of construction at the Moccasin Creek power house.

Max Herskovitz, president of the Peerless Light Company, Chicago, Ill., died Aug. 10.

Trade Outlook

San Francisco

Recent orders for electrical material included nine carloads of fibre conduit for a northern California power company and \$10,000 worth of porcelain insulators for a southern California power company. The awarding of a contract to a local electrical contractor aggregating \$148,000 for electrical work on the telephone company's new building in San Francisco was the center of interest in the electrical contracting field. August sales showed considerable increase over July, and renewed activity in the electrical market is reported. Retail trade has been somewhat dull, but special sales have tended to stimulate it. Within the past two weeks active inquiries have been received by manufacturers for apparatus to be stocked. Since no equipment has been purchased for stock by jobbers and dealers for about a year, this is considered encouraging.

In other lines of business there appears to be a better feeling as fall approaches. Annual market week brought a large number of buyers with a consequent stimulation of sales, and activity among manufacturers indicates increased buying for future delivery. Local paint manufacturers report business good. Building continues active; collections have improved. Bank loans are available for legitimate needs.

The Railroad Commission has reported the net operating revenue of electric light and power companies operating in the State of California amounted to \$39,595,270.15 for the year 1923 as compared with \$29,273,867.23 for 1922.

Seattle

Encouraging reports from the lumber industry continue, and there are good prospects that the demand now apparent for lumber products will continue to grow and that the fall and winter volume of new business will be heavy. Reports from the agricultural sections of the state show a prosperous condition, with prospects of satisfactory prices and market for crops. Retail trade is reflecting a quickened demand. Gradual improvement is expected with the return of vacationists to the city.

Seattle electrical jobbers, as a whole, report that the recent sales volume shows a slight increase, with indications that the gain will continue. Following the vacation period, domestic appliances are moving in larger volume, sales along this line including washing machines, irons, electric tableware, etc. Contractor-dealers have bought heavily of wire, boxes and schedule material, and demand from this source will remain active as long as building continues at present levels.

Inquiries are being received from farming districts for farm lighting units, and there has been a number of calls for equipment from lumbering and industrial plants. Prices are tending upward, although no important changes are noted. Stocks are good.

Los Angeles

The electrical industry in Los Angeles and vicinity showed a slight improvement during the month of August over the preceding month. This is true more of the retail business, however, than of the wholesale, while manufacturers continue to report more good business prevailing in their lines and on a par with preceding months. While the electrical supply business for wholesalers has not shown much improvement, business continues to be good though somewhat under the 1923 record. On the other hand, those wholesale electrical concerns handling radio material are having a very good market, and this is tending to hold up the volume of sales. Electrical retailers report an increase over the low point which was reached during the month of June, and business is going along in a satisfactory manner. This is true in radio departments.

Building activities, while under the 1923 record, are considerably in advance of 1922. In the agricultural industry, crops are not as large as they have been during recent years, but it is expected that with the present prices the monetary value will be about the same.

Portland

Lumber demand, retail sales, building permits, car loadings, wholesale trade, bank clearings, collections and postal receipts all show improvement during the past month.

Probably the most encouraging thing is the revival of the lumber business. There has already been a substantial raise in prices and further increases are expected shortly. About 90 per cent of the mills of the Northwest are operating. New orders are coming chiefly from the East and Middle West, though quite recently the California markets showed some improvement. Motor-operated mills in Portland consumed about 10 per cent more energy during August than they did a year ago.

Water cargoes from Portland to Atlantic Coast ports have increased rapidly during the past year. Foreign wheat and flour shipments for August showed a sharp decline over 1923, while lumber is far ahead of August, 1923, except to Pacific Coast points.

Salt Lake City

Increased employment is noted in seasonal agricultural pursuits throughout this section. Building, municipal improvements and highway construction are also active. The canning season is under way, which adds temporarily to increased industrial activity and furnishes employment to a large number of people.

One of the most encouraging factors in the business situation is the healthy condition of the mining industry, due to favorable metal prices. Improvement of both the actual price and the general outlook for copper is one of the most important developments of recent months so far as the Western mining states are concerned.

Jobbers report somewhat of a slump during the past two weeks, but nothing of an unusual nature for this season of the year. Collections are fair.

Probably the most important merchandising event during the month of September is the Utah Power & Light Company's campaign on kitchen lighting units. This is one of the most intensive campaigns in the company's history, and excellent results are reported thus far, with splendid prospects for the balance of the month. There is continued increase in commercial lighting activity, with improvement in the class of wiring in residences and increase in demand for convenience outlets.

Spokane

The Spokane Interstate Fair held during the week of September 1 brought the usual number of visitors to town, with a stimulation of retail trade as a result. It seems to be the feeling of local merchants that the automobile trade has been especially favored this summer at the expense of other lines.

Industrial activities on the whole are normal, with most of the woodworking plants running at a good output. The railroad shops are working at a level slightly under that of 1923, due in part to the smaller traffic in fruit and grains this year. The packing business, as reported previously, is characterized by large gains this year, and the local market for live stock continues excellent. On account of the decrease in harvesting requirements, there is more unemployment than usual.

Mining activities in British Columbia and northern Idaho continue at the high level that has characterized this whole year. The prices of lead and zinc are holding up, and any increase in price of copper will have a beneficial effect upon producers in British Columbia and Montana.

Denver

Oil development continues to be the chief subject of interest in commercial circles of this region. Reports of progress in the various Colorado fields are most encouraging, according to experts. Indicative of the development is the present negotiation for rights to construct and operate a pipe line from the northwest fields to Denver through the Moffat tunnel now under construction. With this assured, several large refineries would be built in this city.

Shortage of water has harassed the farmers in several sections, especially those specializing in garden stuff. Lack of rain in the mountains has created a condition extremely conducive to forest fires and considerable damage has resulted. Hydro plants as yet have not been forced to reduce operations.

Output of the gold mines is increasing monthly. Coal mining is opening gradually although the present warm weather does not insure domestic consumption to any marked extent for several months yet.

Building in Denver during the past month continued extremely active. Labor conditions are good. Increasing sales are reported by retail stores, although clothing and automobile dealers are still pessimistic. Appliance and radio sales are holding their own with splendid prospects for the fall months.

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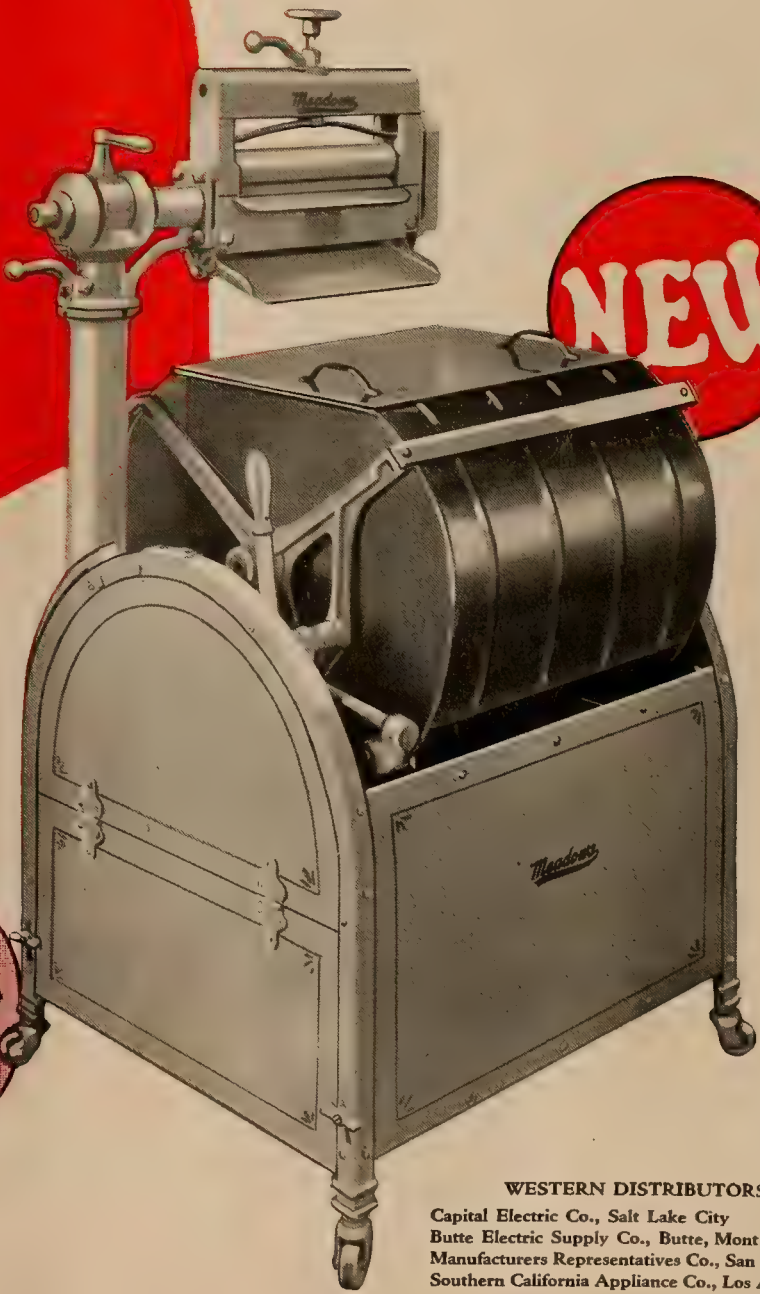
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A Directory Service For the Radio Industry

IN three short years, the radio industry has grown so rapidly that today it includes over 3,000 manufacturers, nearly a thousand jobbers and manufacturer's agents, many thousand retailers and some 500 broadcasting stations. From annual sales of \$5,000,000 in 1920, its output in receiving apparatus alone has increased to estimated sales of nearly \$300,000,000 in 1924.

Naturally an industry of such size needs buying and selling information, particularly because the industry is so new.

To give the radio buyer and seller the answers to all their vital questions, the McGraw-Hill Company announces the Radio Trade Directory and the Directory's List Service. As the world's largest publisher of engineering, industrial and business publications, including such magazines as *Journal of Electricity*, *Electrical Merchandising*, *Electrical World*, *Electrical Retailing*, and eleven others, the McGraw-Hill Company has exceptional facilities to compile and publish such a Directory.

In the Directory will be found classified lists of all the American manufacturers of everything used in the construction, operation and maintenance of radio equipment, both transmitting and receiving—makers of raw and semi-finished materials, parts, accessories, supplies and machinery and tools peculiar to the industry. The Directory will be issued in November and quarterly thereafter.

The List Service will provide authentic data on the wholesalers of the country as well as complete lists of the radio retail trade.

The work of compiling the Directory and the List Service is in charge of J. C. Cortel-you, formerly editor and business manager of the Automobile Trade Directory.



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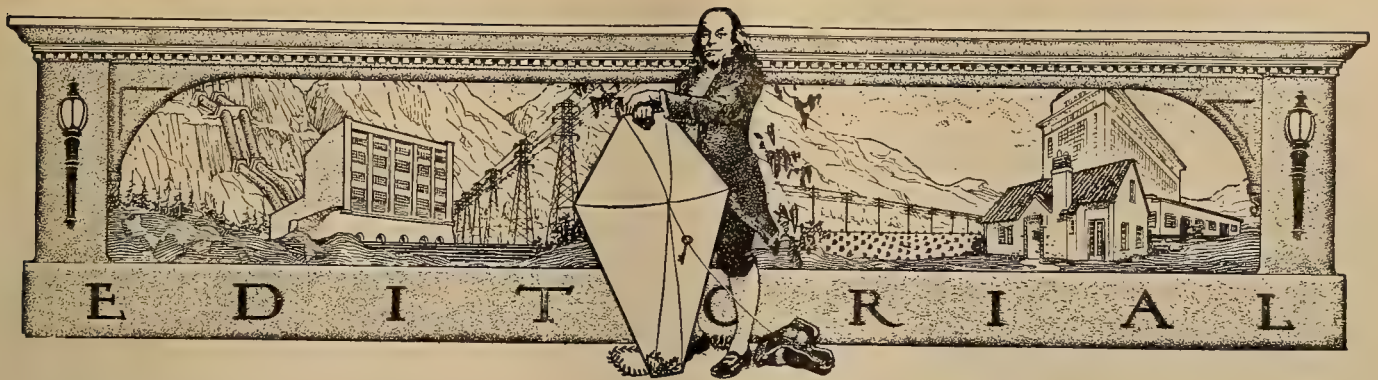
THE BRYANT ELECTRIC COMPANY

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Colorado River Again Arizona's Political Football

THE much discussed, argued and debated Colorado River Compact seemingly died because Arizona insisted in mixing the settlement of the Colorado River question with politics. Ratified by six of the seven states, the compact met its Waterloo in Arizona because that state felt that its interests were not fully protected. Now Arizona politics has reopened the entire question of the development and control of this mighty Western river. More than that, there is a bare chance that the question will be settled and the compact at last passed up to Congress for its approval.

Elsewhere in this issue is a news item from Phoenix setting forth the results of the Arizona primary, in which a candidate who advocates the immediate passage of the compact by the state legislature was nominated for the gubernatorial chair. This new candidate qualifies his support of the compact with the statement that he believes legislation should be passed which will assure Arizona of its just share of the waters of the river despite prior development in California and Mexico. He also holds that provisions should be made for levying a state tax on all hydroelectric energy produced wholly or in part within the state.

Irrespective of the pre-election promises of either of the gubernatorial candidates, the present talk regarding the Colorado is helpful in that it again emphasizes the necessity of an early settlement of the entire question. Before any development can be undertaken there must be an agreement between the several states affected,—either the present compact must be ratified or a new one suitable to Arizona drawn up. It is lamentable that there should be so much political quibbling over such a highly economic question. Within five years Colorado River power will be needed in the Western power markets. Engineers estimate that five years will be needed to complete any of the projects suggested. When will development start?

The Forthcoming Convention of the A.I.E.E. at Pasadena

DOUBT has been expressed in some quarters as to whether the registration at the forthcoming Pacific Coast convention of the American Institute of Electrical Engineers at Pasadena, Calif., Oct. 13-19, will reach the highly satisfactory figure set by

the convention a year ago at Del Monte. Because this has been a dull year for some of the utilities and because others are engaged in developments which necessitate the full attention of their engineers, there is fear that the Pacific Coast will not give the convention the full measure of support that it merits.

Each year the Pacific Coast convention of the Institute has increased in importance until today it is fully as momentous as the national meeting of the organization. This year is no exception, for the program contains many highly important papers. In addition sessions will be held at the recently completed million-volt laboratory of the California Institute of Technology and at the Norman Bridge Laboratory of Physics.

Executives of the Western power companies should give the same support to the Institute which they give to the N.E.L.A., because the Institute is to the engineer what N.E.L.A. is to the commercial man. National support has been assured, for a special party will attend from the East. The expense of sending men to the convention will be amply repaid in the information that the delegates bring home from the papers and discussions.

Anyway—

May the Best Man Win

ELECTION day, this coming November, marks a critical period in our history. Nationally, 1924 has been a year of great achievement. First came the adoption of the Dawes plan for the reorganization of the finances of continental Europe and the determination of a definite plan for the solution of the German reparations problem. This in itself is the greatest event since the signing of the Armistice.

Thus, the European markets will again be thrown open to American raw materials and manufactured goods, and at the same time will bring about sharp competition in our domestic markets with German-made goods, that is, such of them as can breast the tariff wall and still compete as to price and quality.

Politically, we have the spectacle of two gentlemen of acknowledged and proved ability, whose record is written large upon the pages of history, and one radical-socialistic candidate whose program is destructive of our most cherished traditions—all seeking at the hands of the people the highest office in the land.

It shows the weakness of our old party designations that pit two men of similar characteristics against each other to the possible benefit of a third candidate of a diametrically opposite type. It seems timely to adopt a new line-up, in our political parties, that will in their names and aspirations be more appropriate to the issues of today. "Republican" and "Democrat" are terms that are civil war relics of some sixty years' standing, and their use only serves to keep alive issues that ought to have been decently interred many years ago.

Anyway—may the best man win.

And We May Have Electragists in California

THINGS are moving—electrically. When L. W. Davis, of the Association of Electragists, International, came West and spread the gospel of the Electragists throughout the length and breadth of the Pacific Coast, he did what is called in the vernacular of the street a good job. The San Francisco Bay contingent of the contractor-dealers has taken kindly to the idea, and a campaign is about to be undertaken to organize a state-wide chapter of the Electragists, affiliated with the national body, of course.

What is an Electragist? Perhaps as good an answer as any might be given to the effect that an Electragist is a contractor who knows his business and is reliable, nay more, one who has a conscience with respect to what ought to be done and how it ought to be done. The term "Electragist" is copyrighted. Its use by individuals may be controlled by the Association of Electragists, International, so that it will not be applied promiscuously to anyone who has no qualification other than being willing to pay his dues. More than that, the license to use it may be withdrawn, if the holder does not live up to the established quality standards of work.

The Electragist idea is distinctly a constructive movement. The term itself appeals strongly to the imagination, and if it is properly advertised among those who patronize the contractor, and if proper discrimination is exercised in granting licenses to use it, it may, conceivably, mark a new era in the annals of the electrical contracting profession.

Be Careful—the Water and Power Act Needs Only a Majority Vote

A N error in our issue of Sept. 1 needs correction. On page 171 in that issue, we published a recapitulation of the vote on the California Water and Power Act of 1922, and in the introductory paragraph it was stated that the Act required a two-thirds vote to become part of the State Constitution. This statement, unfortunately, was in error. The 1922 Act would have required merely a majority to pass, and the same is true of the proposed 1924 Act which is to be voted upon next November. The fact that this vicious measure requires merely a majority to pass will point the need for our most strenuous efforts, if the State of California is to be saved from industrial socialism.

The Public Meets the Utilities Half Way

WYOMING has added a new chapter to the history that the public utilities of the country are making in their efforts toward establishing a more friendly feeling between the utilities and the public. During the recent joint convention of the Wyoming Utility Association and the Rocky Mountain Committee on Public Utility Information, an attempt was made to keep the utilities public in fact as well as in name. Officials of the organizations issued an invitation to the people of the city where the convention was held to be present during the deliberations of the two-day session. Several customers of the local electric light, telephone, gas and bus transportation companies responded, thus convincingly demonstrating that the people now have more than a bill-paying interest in their public institutions.

During one meeting the president announced that he would be pleased to have all customer-delegates participate in the discussions or voice any criticisms. The self-elected representatives of the telephone-talking, gas-cooking, light-using and car-riding public offered no criticisms. Instead, one of their number volunteered that "the utilities are on the right road and seem to be approaching the goal of public favor more rapidly than any other line of business." He concluded with the remark that "You men are certainly doing your part. I think that we—your customers—everybody—should at least meet you half way, for, ultimately, we will benefit the most."

What a step in the right direction this is! Those utilities which have been spending their time, their money and the efforts of their employees in improving public relations can feel justly proud that the day is coming—has come, in fact—when the public will meet them "half way."

Vote as You Please But Vote

P RE-ELECTION talk is always interesting. The American citizen orates at length on the issues of the day, declaims with vigor about the crises that confront us,—and then goes home full of a sense of his responsibilities as a voter,—and doesn't vote.

This may seem an extreme statement; as a matter of fact, some of the voters do vote. In 1900, 73 per cent of the registered voters actually did vote; in 1908, 66 per cent; in 1912, 62 per cent; and in 1920, but 50 per cent, one-half, did their duty as citizens.

As a matter of fact it is the "intelligent" class of voters, save the mark, that stays away from the polls. Those best qualified to think, and vote intelligently, are either physically lazy, or palpably negligent in their duty when election day comes. Is it any wonder that the professional politician regards with a certain serenity the obviously vicious legislation that he is promoting and feels that his chances to put it across are good?

This is no new phase of human nature; people have been that way for centuries, but it seems a pity

that with the political freedom existing in the United States, public conscience and personal responsibility have not developed at the same rate as have other activities.

If we have a radical-socialistic president, if we pass the Bone Bill in Washington and the Water and Power Act in California, it will be because the "better class" of citizens stays away from the polls. This "better class" is largely in the majority. If they vote, they will win. Wake up, everybody, and do your whole duty to your country. Vote as you please, but VOTE!

Progress

by Unity

ANOTHER convention of the California State Association of Electrical Contractors and Dealers has passed into history. The entire meeting was marked for its harmony and for the spirit of co-operation evident on all sides. Under competent guidance the association has made progress not alone in the growth of numbers but in the constructive work done for the membership. Once more is proved the truth of the maxim "In union is strength" and the organization starts a new year of activity fortified with the results of intelligent performance. Contractor-dealers throughout the state who are disposed to a proper conduct of their business and to a genuine relation with their fellows will take an active part in the work of the association and lend it their whole-hearted support.

Birds

of a Feather

NOT the least interesting item in the political affairs of California, is the alignment of the forces that are trying again to foist the California Water and Power Act upon the people of that state with the La Follette campaign for the presidency. This should clarify the atmosphere a great deal, for it stamps the whole program as frankly socialistic in its purpose, not merely for the state ownership and operation of power plants, but ultimately of every other industrial and business activity as well.

We wonder what the World War veterans think—if their memories hark back to the black days when the German submarines were sinking our merchant vessels without warning—of the combination between the United States Senator who talked down the proposal to arm them for self-defense, and the California proponents of the Water and Power Act. Likewise, what is the opinion of the labor union men, many of whom are ex-soldiers, whose governing bodies seem to have endorsed the La Follette campaign?

Is our memory so short as this?

The "First"

Hydroelectric Plant

EVERY once in a while some one gets up and makes a statement that the Blank hydroelectric plant was the first to be operated in the United States. There have been as many "first" hydro plants as a political candidate claims "birthplaces" in his scramble for votes before an election. Yet a

political candidate can only be born once and there can be only one first hydro plant. The Pacific Coast has done its share in creating an erroneous impression. Several of the earlier plants in the West have been labeled at times as the pioneer.

A careful check of the literature of the electrical industry shows that so far as known the first hydroelectric central station was installed at Appleton, Wis., in 1882. The earliest hydro plant in the West was constructed by the Roaring Fork Electric Company at Aspen, Colo., in 1885. This plant furnished energy to street lights and to the mercantile establishments of the town for lighting purposes. In 1887 energy was supplied to a three-wire Edison system for lighting homes. In 1886 a hydroelectric central station was installed at Spokane and the next year a plant for lighting the streets of Tacoma was constructed in that city. A plant which has often been cited as the "first" in the West was built on the Willamette River in Oregon in 1889, to supply energy to Oregon City.

As far as California is concerned, the first hydro plant was built by the San Antonio Power Company at Pomona in 1891. This plant was the first to employ high tension transmission, energy being transmitted twenty-eight miles at 10,000 volts.

It is highly important that the early history of hydroelectric development in the West be recorded, especially as those who are familiar with the installations are rapidly passing away. If any of the above statements are in error we would welcome information setting the industry aright.

A Rose

By Any Other Name

THERE is an old saying, in effect that nothing is sure but death and taxes. Of taxes there are two kinds, direct and indirect, or in other words, visible and invisible. The income tax is an excellent example of the direct, or visible tax. The other types are merely items of added cost that enter into everything we buy, no matter what it is. Not merely that, but taxes of this nature are pyramided. The man who produces raw material, sells it, with taxes taken into consideration of cost, of course, to the manufacturer. He makes something out of it, adds his taxes, and then his profit, and sells to a jobber. He, in turn, adds his taxes and his profit and sells to a retailer, who repeats, so that the article in question is saturated with tax items, and profits on tax items, by the time the consumer holds up his hands in dismay at what he calls the increasing cost of living.

The socialists, and other advocates of government ownership of utilities tell us about the "saving" to the people if their plan should be adopted. In California, the state revenues are obtained from corporation taxes, now amounting to nearly 10 per cent of their gross revenues. Take the power companies off the list of taxpayers, and every other business will have to make up the deficit. These taxes of course, are passed on to the consumer, who, in the end, will pay for the loss in state revenue, as usual.

AIRPLANE view of Long Beach steam plant of the Southern California Edison Company to which 100,000 hp. of generating capacity is being added. The cooperation of manufacturers and contractors will put the first unit in service several months ahead of schedule.



Oak Grove Development of the Portland Electric Power Company

By Berkeley H. Snow

Northwest Editor, Journal of Electricity

IN the respect that it includes the highest head reaction turbine in the world, the Oak Grove development of the Portland Electric Power Company, is unique in hydroelectric construction. Under an 875-ft. effective head a 400-sec.-ft. flow is to develop approximately 35,000 hp. in a vertical reaction turbine constructed in the San Francisco factory of the Pelton Water Wheel Company. Aside from this fact, the plant, which was brought in Aug. 4, 1924, is the newest development on the Pacific Coast and presents many interesting features.

The plant is located on the Clackamas River, Clackamas County, Ore., about 19 miles upstream and southeast of Cazadero, which is 35 miles southeast of Portland. At Faraday, near Cazadero, is situated Station "G," one of the older plants of the company, and it is at this point that contact is made between the new plant and the company's system.

Water is taken from Oak Grove Creek, tributary to the Clackamas River, 6.6 miles above the plant, and in the present stage of the development of the project, the normal flow of the creek is required to operate at full capacity the single unit that has been installed. The creek, finding its source in mountain springs and depending largely upon rainfall for its water, fluctuates in flow between 325 and 600 sec.-ft. at the site of the dam, the year-round average being about the 400 sec.-ft. required in the present installation.

Construction Railroad and Camps

To facilitate construction, which was commenced in July, 1921, the company extended its electric railway from Cazadero to Straight, a distance of 5½ miles. From here a standard gauge, logging-type railroad was built to the dam site, 24½ miles. Construction of the railroad grade involved the removal of 543,363 cu. yd. of material. Over this road a number of gasoline speeders and four 50-ton, Shay-gear locomotives with suitable freight cars took care of the movement of men and materials, and supplies for the camps.

During construction there were a total of sixteen camps established, fourteen of these being main-

THE power supply of the Willamette Valley has recently been augmented by the completion of the 30,000-kva. Oak Grove plant of the Portland Electric Power Company, constructed on one of the tributaries of the Clackamas River at a cost of \$8,600,000. In addition to having the highest head reaction turbine in the world the plant possesses numerous other features unique in hydroelectric construction. Ultimate construction plans call for the installation of two additional 30,000-kva. units in the plant.

tained at one time to take care of about 2,000 persons. During this period of peak conditions there was a maximum of 1,800 men employed. The Hurley Mason Company of Portland were the general contractors on the entire job. The J. G. White Engineering Corporation of New York were the consulting engineers on the job, while the company's own engineers did the designing and took care of the engineering during construction.

An arch-type diversion dam of concrete, 69 ft. high and 190 ft. long at the top, sustains a head of 45 ft., and floods about 27 acres. Its crest is at El. 2,035. Three vertical-sliding, steel headgates, manually operated, control the flow of water into the intake structure at one side of the dam, introducing it immediately into the upper portal of a tunnel, 250 ft. long, through an abutting hill. About 180 ft. beyond the lower portal of this tunnel is another hill that was tunneled for a distance of 890 ft., and connection is made between the two by means of a reinforced concrete pipe. Both tunnels are concrete lined. Since the ultimate development of the project involves tripling its present capacity, requiring 1,200 sec.-ft., the headgates, and both tunnels and connecting pipe are designed to carry this flow, and a diameter of 12 ft., 4 in. is maintained.

In the connecting pipe a rock trap was built by depressing the floor of the pipe and leading this depression into a trough. The heavier suspended matter collects in this trough and periodically is expelled into the stream through a gate in the bottom.

Flow Line

At the lower portal of the second tunnel is a concrete transition section designed to deliver the water to two conduits—the one now operating, a 9-ft. pipe to carry 400 sec.-ft., and one to be installed in the ultimate development, 11 ft. 6 in. in diameter, to carry 800 sec.-ft. The present line is a single pressure-conduit made of 9/32 in. to 11/16 in. steel plate, fabricated and erected by the Willamette Iron & Steel Works, Portland. It is 6.3 miles in length and weighs 9,600 tons. For the greater portion of its length it is laid in a shallow trench following the irregular-

ities of the terrain except at a few points where canyons are bridged and where two hills are tunneled. It contains standard horizontal and vertical curves with a radius of four and one-half times its diameter.

At each high point in the line is a bell-float air valve, protected by a small wooden house. These valves, of which there are eleven, automatically open with a fall of water in the pipe so as to protect it from collapse from the force of a vacuum created by a stoppage of the flow above. The houses over the valves are equipped with swinging windows that will open inward or outward in case of a rush of air into or out of the valves. At each of the twelve low points in the conduit there is a 12-in. hydraulic gate valve for draining the pipe.

Water can be shut off from the pipe line by means of two butterfly valves, one placed at the head end of the line at the lower portal of the intake tunnel, and the other at the upper portal of the Cripple Creek Knoll tunnel. After the installation of the



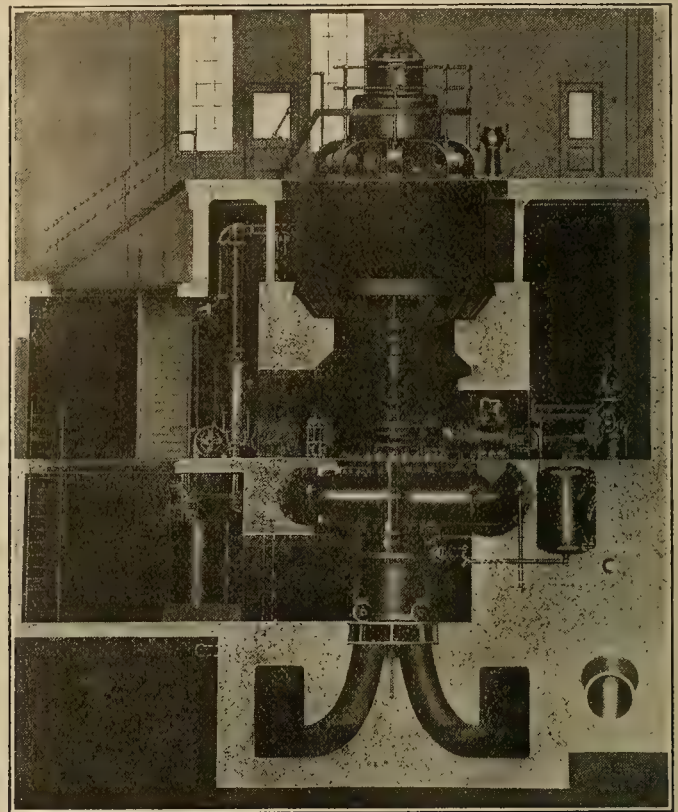
Concrete arch type diversion dam on Oak Grove Creek.

second conduit, which will contain similarly placed valves, either line, independently of the other, may be cleared of water for interior painting or repairs.

Cripple Creek Knoll Tunnel and Surge Chamber

Cripple Creek Knoll is a steep-sided, sharp-pointed hill some 900 ft. high, having its base on the edge of the Clackamas River, with its top rising to El. 2,018. The power plant lies at the foot of this knoll. The flow line enters the knoll at El. 1,850 and a tunnel, 14 ft. in diameter, lined with steel and concrete, extends through the knoll a distance of 430 ft. It is bored with a slight vertical curve downward and a similar horizontal curve to the right to

bring the structure to a convenient bench on which to construct the penstock transition. At the upper portal of this tunnel a transition section is constructed to allow the entrance not only of the present 9-ft. line but also of the 11-ft. 6-in. conduit of the completed development. At the lower portal, the



Section through power house showing generator, turbine and draft tube. Removable draft tube section, mounted on wheels, for removal to permit lowering of runner, is also shown.

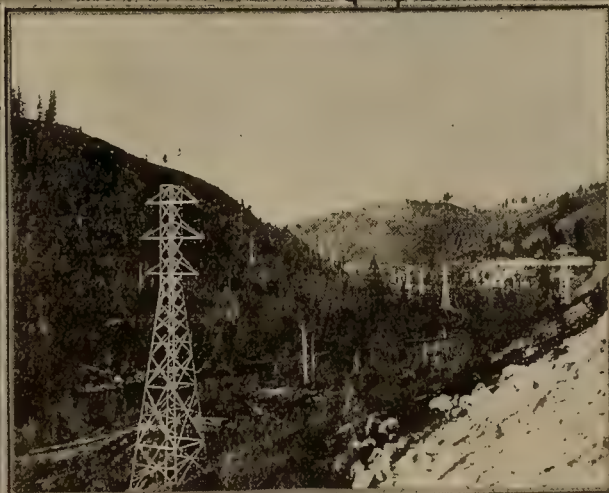
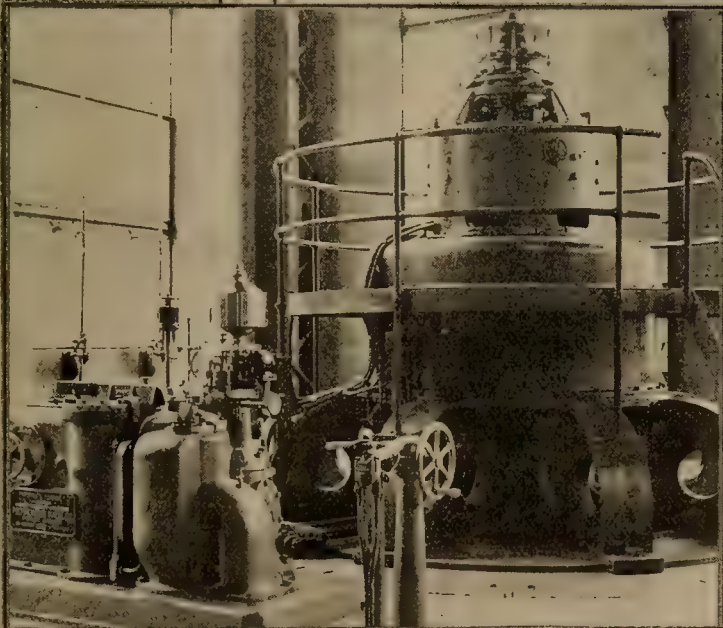
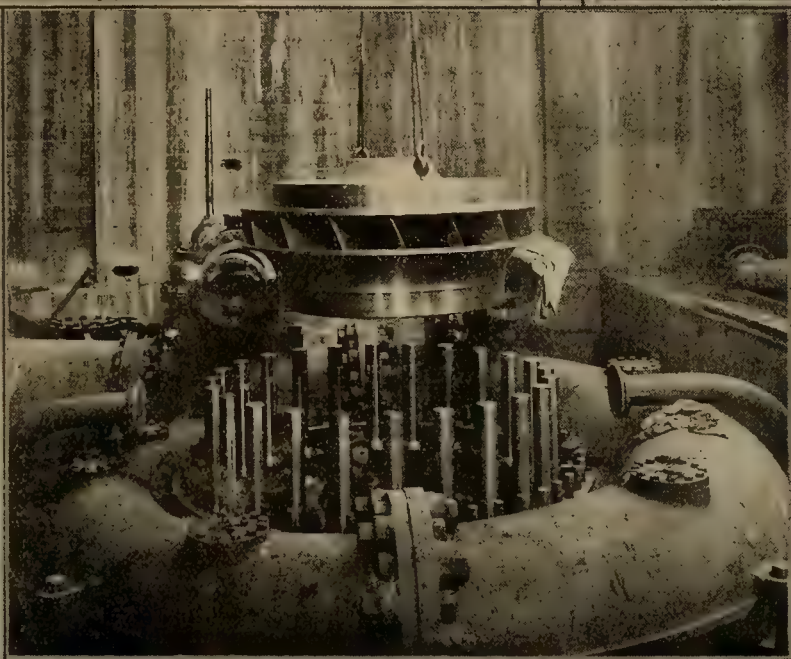
transition section consists of a steel manifold with outlets for the connection of three 8-ft. penstocks.

Rising from the approximate center of this tunnel is a vertical shaft, 14 ft. in diameter and 110 ft. high, widening into and connecting with the surge chamber, which is 31 ft. in diameter. The surge chamber rises vertically another 87 ft. which brings it out of the extreme top of the knoll to a height of about 30 ft. above the ground, to El. 2,047. On the south side of the tank, 7 ft. down from the top, a spillway is provided to discharge waste water down the south side of the knoll. This structure follows the standard design of the Johnson differential surge tank, and both shaft and chamber are concrete lined.

Penstock

The present single penstock follows the slope of the hill. It commences at the lower portal of the tunnel in the knoll, at El. 1,812, and reaches its bottom El. 1,120 in the power house with a total length of 1,360 ft. It is 8 ft. in diameter at the top and 6 ft. at the bottom, and is made of steel plate, $\frac{3}{8}$ -in. to 1-7/16-in. in thickness, fabricated and erected by the Willamette Iron & Steel Works, and is completely encased in a concrete shell. At the top is a 66-in. Johnson valve, hydraulically operated, that can be closed from the power house by a push button

ANOTHER record for hydroelectric design and construction has been won by the West following the installation of the world's highest head reaction turbine in the Oak Grove plant of the Portland Electric Power Company. At the upper right is a view of the tunnel intake during construction work and at the left center a portion of the 6.3-mile, 9-ft. steel flow line may be seen. The bronze runner is being lowered into position in the 35,000-hp. turbine in the illustration at the right center. The lower pictures show generator and hydraulic operating mechanism and a portion of the transmission line leading from the new plant.



electrically controlling the valve operation. At the bottom in the power house is a 72-in. butterfly valve, driven by a geared impulse-water-wheel that is reversible in operation. This valve may also be operated by an electric motor when there is no water pressure on it.

Further provision for water control is made by a relief valve direct-connected to the water wheel gates. As the governor automatically closes the wheel gates it opens the relief valve which bypasses the water around the turbine and discharges it into the river beside the tailrace.

Power House and Equipment

The power house is a concrete building, 65 ft. by 70 ft., for the present installation of one unit. The ultimate development of three units will necessitate extending the building another 65 ft. in the upstream direction, making it 130 ft. by 70 ft.

The upstream end of the main room, in which the generator is situated, has a floor raised 10 ft. above the ground level. The generator is so placed that only the top bearing and exciter protrude above this floor, while the generator proper is below it and separated from the rest of the room by a solid wall. This design confines the noise and heat of the machine to an isolated room, which is ventilated by ports through the outer wall of the building. In cold weather these ports may be closed and similar ports



View of 9-ft. steel flow line in national forest.

in the ceiling opened so that the generator heat can be diverted into the main room for heating the building. On the upper floor of the main room are situated the governor and the standby exciter, while the lower level is left unobstructed to provide space for working on equipment in case of necessity. Overhead, the 90-ton Whiting crane can travel the length of the room.

On the hill side of the main room, and separated from it by a steel-sash and glass partition, is the switchboard room. Adjacent to this is a small room housing the main oil switch of the generator, the only high tension switch in the building. The lower levels of the building contain the turbine and penstock valves, the gravity lubricating system, the

governor oil-pressure system, the battery room, the storeroom for spare parts, another repair room, and the sumps and sump-pumps.

As previously stated, the hydraulic unit installed in this plant creates a new world's record for high head reaction turbines, the former record having been held by two Pelton turbines of similar type operating under 810 ft. effective head in the Kern River No. 3 plant of the Southern California Edison Co. The Oak Grove unit is designed to develop 35,000 hp. under an average effective head of 875 ft. and embodies the most advanced features in turbine design as developed by the Pelton organization in association with the Wm. Cramp & Sons Ship and Engine Bldg. Co. of Philadelphia. At present the unit is operating at an effective head of about 850 ft. Among the outstanding features of the unit are: rubber seal rings for elimination of leakage; Moody spreading draft tube, a portion of which is removable to facilitate inspection of the turbine runner within a few hours time; a 72-in. butterfly valve, equipped with needle-type bypass, and controlled from the main floor through water motor or electric motor; a water economizing governor-operated relief valve, capable of bypassing the full water quantity; a duplicate oil pressure system, each set independent of the other. The turbine output is controlled by a Pelton governor of 100,000-ft.-lbs. capacity, with actuator on the main floor and with servomotors mounted on the turbine casing. The actuator is equipped with a load limiting device and is arranged for remote control from the switchboard.

The generator is a General Electric Company vertical, direct-driven, 30,000-kva., 11,000-volt, 60-cycle, 514-r.p.m. machine having a 90-kw., 250-volt, direct-connected exciter. The auxilliary exciter is of the same manufacture and consists of a 300-hp. motor driving a 200-kw. generator. The switchboard is a modern General Electric, vertical-panel-type board with push button control.

Outside the power house in the downstream direction are located a small machine shop building, the station service transformers, the step-up transformers and the steel switchyard. Station service is supplied through one 500-kva., 3-phase, 11,000-2,300-volt, Westinghouse Electric & Manufacturing Company transformer for the larger motors, and three 50-kw., 2,300-110/220-volt, Westinghouse transformers for the smaller motors and lighting. The transmission voltage of 66,000 is attained through three Westinghouse, outdoor-type, water-cooled, 10,000-kva., single-phase transformers, delta-connected, having a range in full-capacity voltage taps of 15 per cent. The future development of the plant will require a like transformer installation for each additional unit, and a star connection will deliver 115,000 volts to the transmission line.

The switchyard also contains two Westinghouse 115,000-volt oil switches (controlled by push buttons at the switchboard) with bushing-type current transformers. The potential transformer is also a Westinghouse product, rated at 72,600 volts, with a ratio of 660 to 1. At the point where the transmission line leaves the switchyard is cut in a General

Electric Company oxide-film-type, 4-stack lightning arrester, with horizontal spacing designed to operate at 115,000 volts.

Transmission Line and Telephone

The transmission line connecting the Oak Grove plant with the company's system at Station "G" at Faraday is 18.71 miles in length. It is at present a single-circuit line with 250,000 circ. mil. stranded copper conductors, on Ohio Brass Company suspension insulators, with clearance for 115,000-volt operation. It is supported on one side of steel towers with the center conductor swung 2 ft. wide of the vertical plane in which the top and bottom conductors are suspended. A second circuit can be supported on the other side of the towers when the ultimate capacity is installed. There are 145 towers, furnished by the Pacific Coast Steel Company, San Francisco, having an average height of 72 ft. and a maximum weight of 8,415 lb. Each of the four legs terminates in a horizontal-grill footing buried 6 ft. under ground.

From Oak Grove to Faraday the Clackamas River winds between heavily timbered slopes, so that it was necessary to clear a right of way approximately 400 ft. wide for the transmission line. On account of the nature of the country traversed the line has few long tangents, and it was necessary to cross and recross the river thirty times. For construction purposes, and to facilitate prompt repairs in operation, there were fifteen aerial cable crossings installed from one side of the river to the other.

One of the most interesting features of the development is the Western Electric Company carrier-current telephone system. This is the first of its kind to be installed in the Pacific Northwest. Sending and receiving equipment has been installed at Oak Grove and at Station "L", a steam plant in Portland, and a metallic phone line completes the connection to the load dispatcher's desk in the Electric Building, Portland. Eventually this system will be expanded to connect the load dispatcher direct to all the plants on the company's system.

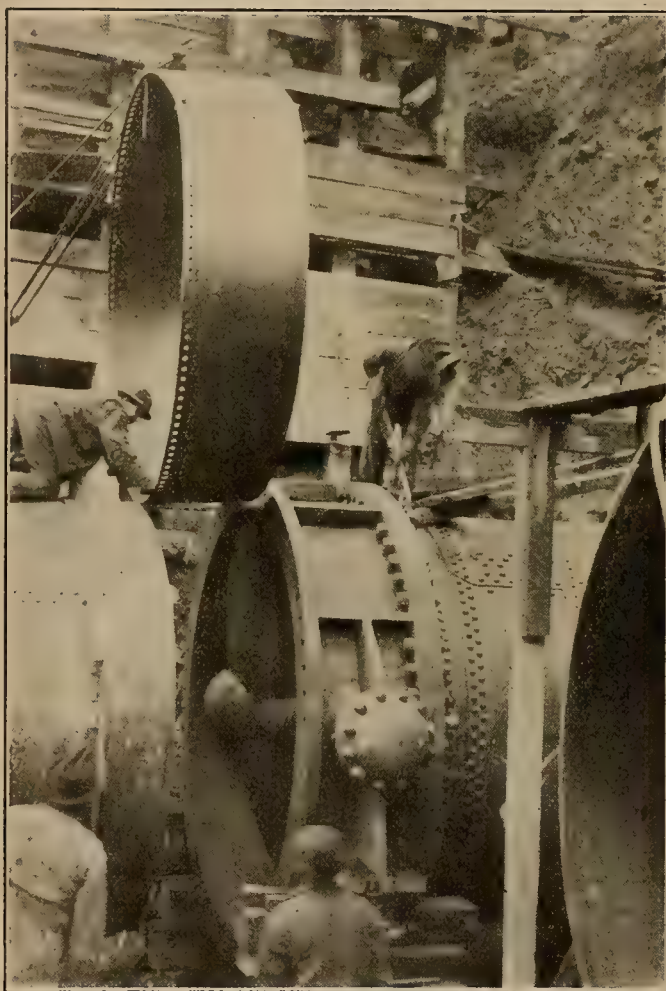
The entire development, with the exception of a portion of the railroad and transmission line right of way, lies in the Oregon National Forest, so that complete cooperation with the Forest Service was necessary to prevent fires during construction. Now in actual operation this cooperation still exists, and the company's material and personnel are available to assist the rangers in their patrol work and fire fighting. There are a number of valves in the pipe line, installed at the instigation of the Forest Service, to be used in case of fire along the right of way.

The clearing for the flow line amounted to 300 acres and for the transmission line, 500 acres. In the course of this clearing 15,000,000 ft. of timber were cut, of which approximately 10,000,000 ft. can be salvaged and hauled out to be cut into lumber. The balance will have to be burned as the Forest Service is requiring that all logs and debris be cleaned up thoroughly.

The cost of the Oak Grove development as it stands is \$8,600,000. A large part of this cost was

consumed in preliminary and construction expense incidental to the complete ultimate development. Thus in the future expansion of the project, advantage will be taken of the clearing, the railroad, the camp sites, a considerable quantity of construction equipment, the dam and intake tunnels, the Cripple Creek Knoll tunnel and surge tank, the transmission towers, the operators' cottages, and innumerable smaller items of cost that will reduce materially the cost per horsepower of the future installed capacity.

There are several different plans for the future completion of the project in two steps, all looking to the ultimate installation of two additional 30,000-kva. units. One feasible plan that is receiving con-



Assembling 66-in. butterfly valve in flow line.

sideration is to dam the Upper Fork of the Clackamas River to a height of 130 ft., thus creating in the flood season a storage in the so-called Big Bottom of 60,000 acre-ft. This storage would be able to supply the necessary additional 800 sec.-ft. during the low water season, and a tunnel 3 miles long would deliver this water to the present intake. It would then be necessary to construct the second conduit, two additional penstocks, water wheel and generator units, and transformer installations identical with the present ones, and the second transmission circuit on the present towers to Faraday. Increased transmission capacity from there to Portland would also be necessary.

Comments on the Proposed California Water and Power Act

By Hon. Albert E. Boynton*

AT the approaching election, for the second time, the proposed constitutional amendment known as the California Water and Power Act, which in the identical form was rejected two years ago by the decisive majority of 354,000, comes before the people of California as an initiative measure.

Our attention is invited by adroit politicians favoring the Act to a sophisticated comparison of certain rates, carefully picked by them, as charged by this or that publicly-owned project with rates charged by this or that private company. Such comparisons are quite misleading. No effort is made to account for incomparable factors in the costs which make up the rate. For example, the domestic lighting rate of a small municipal distribution plant like that of Redding or Lodi or Alameda is compared with the domestic lighting rate of the Pacific Gas and Electric Company in San Francisco. No mention is made of the fact that these small public ownership projects buy all their electricity from the large producing power companies, at wholesale rates set by the California Railroad Commission, and fix resale rates to various classes of consumers without regulation by the Railroad Commission.

These small municipal distribution systems are mere parasites living on the bounty of the power companies. They pay only for the amount of current which they draw through the meter. They serve a profitable and populous territory. For the most part they have little or no investment in underground construction. They have no big industries, no thinly settled agricultural regions to serve, no load-factor problems to solve. One big industry coming into their territory would swamp them. When the Bethlehem Shipbuilding Corporation set up its plant in Alameda it had to get electricity by a special line from one of the large companies.

These municipal systems are petty retailers, favored by conditions because there are so few of them. The gross revenue of several of them is less than that of a small mercantile business. If there were a few more such municipal distribution systems the Railroad Commission would be compelled to increase the wholesale rates which such municipalities now enjoy, for the drain on the other customers

SENATOR BOYNTON, former State Senator of California, analyzes the specious claims of the proponents of government ownership and operation of power plants that power rates are lower under state and municipal ownership, and tells the story of such projects as are still operating under this plan.

of the power companies would become too great. In fact, an increase in the wholesale rates is inevitable. These municipalities usually establish lower rates for domestic lighting than the Railroad Commission sets for the power companies, for domestic consumers are most numerous and have votes, but their average rates for all

classes of consumers, in every instance of which I am aware, are as high or higher than the average rates charged by the corporations, notwithstanding the fact that the corporations pay taxes amounting to about 10 per cent of their gross revenue from rates.

The California Railroad Commission requires the companies to charge higher rates for domestic lighting in order that industry and agriculture, on which the communities depend, may enjoy lower rates. This is a mere detail of classification. The matter of importance to the community is the average rate, for the man who pays 8 cents a kw-hr. for domestic lighting is compensated by the building up of his city through the encouragement of industry and the cheapening of manufacturing costs. Lodi gets its current for lighting small homes from its tiny municipal distribution system at a lower rate than Stockton pays for the same class of service, notwithstanding the fact that the Lodi municipal system buys its power wholesale from the same company that serves Stockton; but contrast the industrial development and the real estate values of Lodi with those of Stockton! For every class of service except the lighting of very small homes the rates for electricity are lower in Stockton than in Lodi.

There are a few publicly-owned power projects that produce hydroelectric power, such as those of the city of Los Angeles, the province of Ontario, and the cities of Tacoma and Seattle; but in their cases, as in the instance of the municipal distribution systems, rate comparisons are impressive only to those unacquainted with the facts.

Los Angeles

In considering the venture of Los Angeles into the electric power business these salient facts stand out, and must not be ignored in any discussion of the public power enterprise of that city:

1. The cost of construction was grossly underestimated.
2. The Los Angeles project serves both water and power. The water is brought from the Owens

*Excerpts from an address delivered before the Commonwealth Club, San Francisco, Aug. 21, 1924.

River more than 220 miles away. The aqueduct cost approximately \$25,000,000. The power plant is at San Francisquito Canyon close to the city. No portion of the cost of building the aqueduct the 200 miles from Owens River to the power plant has been charged against the power enterprise as part of its capital investment. The aqueduct has been treated in power bureau bookkeeping as if it were a natural stream which Providence had placed in that convenient location for the benefit of Los Angeles. If interest on half of the cost of the aqueduct had been included in the operating expenses of the power bureau the result would increase the power bureau's expense by a very large amount.

3. The power bureau pays no taxes. Its taxes, if it were a private corporation, would have amounted to about \$775,000 last year. That is about one-third of the profit which it claims. If the service were charged with interest and depreciation for its share of the aqueduct, its claimed profit would be reduced below the boasting point.

4. Since the beginning of the enterprise in 1919, the taxpayers have been compelled to contribute about \$6,500,000 for interest on and the redemption of power bonds. Promised profits failed to meet bond obligations to that extent.

5. More than one-half of the electric power distributed by the municipal power bureau is purchased from a private company.

6. Domestic light rates are lower in Los Angeles than in San Francisco but for the most part power rates are higher there than in the northern city, and on the average, without any allowance for the fact that 10 per cent of rates charged by the San Francisco companies is returned to the state in the form of taxes which should be deducted when making the comparison, rates are lower in San Francisco than in Los Angeles. Moreover, in Los Angeles the Los Angeles Gas & Electric Corporation sells power as cheaply as the municipality.

7. The great industrial growth of Los Angeles has been mostly in Torrance, Vernon, and other localities which are not served by the municipal power bureau; and the industrial growth of the San Francisco Bay region, served by private companies, has far exceeded that of Los Angeles.

8. Taxes are lower in San Francisco than in Los Angeles.

9. The investment per capita in underground electric construction is twice as large in San Francisco as in Los Angeles, and interest and depreciation on the cost of underground construction constitute about 12 per cent of the power rate in San Francisco.

Tacoma's Power Venture

Tacoma has been in the power business for a dozen years. Its plant on the Nisqually River lacked a regulating reservoir, and at minimum stream-flow it ran short of power. In January, 1922, a private company offered to contract with the city to supply it with 25,000 hp. a year at a cost of 10 per cent less than the city could produce it, but the offer was refused. The following winter source-streams froze and Tacoma had a light and heat famine that lasted

a week. Street lights went dark, heat service was restricted and apportioned, and an epidemic of sickness followed.

For a while Tacoma was buying current from private companies at 8.2 mills a kw-hr. and selling it on heating contracts at 5 mills. This was the famous 1/2-cent rate that inspired public ownership advocates to put out a story about Tacoma becoming a chimneyless town. As a matter of fact Tacoma got tired of losing about \$10 a year on every heating customer and stopped taking such contracts a year and a half ago (March, 1923). Under a new plan strict limitations were imposed, rates were doubled, and service was made subject to discontinuance during November, December, January and February, the four coldest months in the year in a section where artificial heat in winter is necessary to life.

At last accounts Tacoma's contracts for heating houses were 2,150 in number and getting fewer instead of more numerous. Tacoma has 25,000 homes, and the high mark for houses heated by electricity was less than 9 per cent—no great showing for a "chimneyless town."

Tacoma has overhead wires. Its power lines were built out of depreciation reserve, its street lighting investment was paid for by assessments, and the legal costs of the lighting business are paid out of the general fund. Naturally its books show a profit, but it is now busy with a new power project at Lake Cushman, and when this is completed the bookkeepers may have to resort to other and stranger expedients to encourage the voters and to hold their own jobs.

The Sad Record of Seattle

Seattle has been in the light and power business about eighteen years, yet today a private company supplies 70 per cent of the current used within Seattle's city limits.

One of the great achievements of the Seattle municipal power adventure was the building of the Cedar River dam. Against the advice of the state geologist they built the dam on a glacial moraine and it leaked as badly as a sieve. Twice the dam broke. The first time the waters overran the little village of Cedar Falls and drove 200 people from their homes. After that Seattle had the site of Cedar Falls condemned for watershed purposes and patched the dam, but it broke through again one holiday season, put the tracks of the Milwaukee railroad 10 ft. under water and wiped out a lumber camp. This time Seattle answered damage claimants with the solemn declaration that the disaster was an act of God.

Seattle put about \$2,000,000 in its leaky dam, and today the dam's principal use is that of a foot bridge across a canyon.

Then there is the Skagit project, a tremendous development that private companies dared not undertake because of great cost and lack of market. After rejecting the proposal of a contracting firm to build a 50,000-hp. plant and transmission line for \$5,000,000 the city went ahead on the theory that it could do the work cheaper. Since then several years have passed. Two or three times plans were changed.

Proposed height of dam was decreased, rock-filling and timber-cribbing was substituted for concrete, capacity figures were revised downward, yet costs kept rising. To date Seattle has issued \$11,000,000 in Skagit bonds, and the coming in of the first unit, which was set for the first day of last January, is still a matter of uncertainty. Yet the city's public ownership experts said that a plant larger and more durable than the one Seattle will eventually get would not cost more than \$4,980,000. It hasn't any plant yet, and the interest charges are running merrily along to the tune of \$600,000 a year. Now the interest is being charged against construction, but when Skagit finally comes in that \$600,000 will cut a great hole in the annual receipts of the municipal light and power department. What Seattle will do with its excess power is a question. The cost will forbid rate reductions, and at best its sales demands will do no more than keep pace with the city's normal growth. So the Seattle public ownership advocates seek to extend their power business into outside territory, and are now beating the cymbals for the Bone bill that would permit Seattle to sell light and power anywhere in the state **without paying any taxes.**

So far as rates are concerned Seattle today charges its people more for light than is charged in Spokane, which depends wholly upon a private company (40 kw-hr. in Seattle cost \$2.20; the same amount in Spokane \$2).

Facts About the Ontario Venture

The Province of Ontario has a great publicly-owned power system. Most of its power is derived from Niagara Falls, the greatest natural source of water power in America. The principal centers of population, which are the big markets for power, are much closer to Niagara Falls than are the big cities of California to our sources of power in the Sierra, and the country between is much less difficult for transmission construction and operation in Ontario than in California. The Province sells power at wholesale rates to the municipalities which, in turn, distribute it to the public. The system of rate-making in Ontario, where there is no regulation, is entirely different from the system in California. Thus by reason of both natural and artificial conditions a comparison of rates between Ontario and California is not likely to shed any light on the question as to whether it would be expedient for the State of California to undertake the production and distribution of hydroelectric power. Rates in Ontario ought to be very much lower than they are in California because of the fact that Ontario possesses Niagara as a source of power and because Niagara is close to the big cities.

The Gregory Investigation Commission on the Hydroelectric Power Commission of Ontario found, as reported by the "Electrical World," March 22, 1924, "that the principal estimates of cost developments submitted by the Commission to the government have been, in nearly all cases, far too low. So wide has been the difference between estimates and costs that the fact that the estimates should

have been submitted as representing the probable cost of the works seems almost incredible." This is the familiar story with respect to public ownership projects. The taxpayers are tricked into the enterprise by underestimates of cost and are then compelled to add greatly to the investment in order to protect the money previously sunk in it.

Political Lighting Rates

Domestic lighting rates charged by some of the municipalities in Ontario are apparently considerably lower than domestic lighting rates in California. Lighting rates there are generally lower than power rates. Under publicly-owned power enterprises the domestic lighting rate is likely to be a political rather than a scientific rate because the domestic lighting consumers represent the votes. In California, as I have said, our Railroad Commission makes the domestic lighting rate high in order that the industrial and agricultural rate may be low, deeming that the interest of the community is best served by that classification. Whether the theory of the Railroad Commission be right or wrong, obviously to compare the domestic lighting rates in Ontario with the domestic lighting rates in California is unfair to the regulated power companies of California. The public power service of Ontario pays no taxes, whereas, as I have said, the taxes—federal and state—collected from the power companies of California amount to about 10 per cent of the rates. Nevertheless there is no evidence, in spite of the natural advantages that Ontario enjoys and in spite of the tax differential, that **average** rates in Ontario are lower than average rates in California. Indeed, in many of the municipalities of Ontario even the **domestic** lighting rate is much higher than it is in any California city.

In California the companies serve all sections and all classes: the unprofitable as well as the profitable territory. Only about one-half of the population of Ontario is served with electricity and that one-half includes the profitable congested areas. In California virtually the entire population commands electric service. Farmers particularly fare poorly under the Ontario system. At the close of 1922 there were less than 14,000 consumers in the agricultural regions of Ontario. The population of the Province is only one-half million less than that of California but in California the number of agricultural consumers is 167,500. The rates to agricultural consumers are much lower in California than in Ontario although in Ontario the electric service pays no taxes and the provincial government subsidizes the agricultural service by paying 50 per cent of the investment charges on such service.

H. G. Butler who was power administrator of California said last March that "there is probably nowhere in the world an agricultural territory so well served by electricity as the two great central valleys of the state, the San Joaquin and Sacramento Valleys."

The average consumption per capita in Ontario is 168 kw-hr. while in the territory served by the Pacific Gas and Electric Company and the Great

Western Power Company it is 179 kw-hr., which would not indicate that the consumers in Ontario had any advantage in the matter of average rates.

While the reports of the Ontario Power Bureau show power rates, they fail to show the total consumption of electricity for power purposes and therefore it is impossible to compute from them the average cost of power per kw-hr. for all classes of service in Ontario. The reports of the Pacific Gas and Electric Company indicate that the average rate per kw-hr. sold by that company to all classes of consumers in 1923 was only 1.96 cents. I repeat that comparison of power rates for electricity between Ontario and California signifies little or nothing because neither physical conditions nor rate classifications are comparable. Supporters of the California Water and Power Act persist in comparing the domestic lighting rates of selected cities in Ontario with those of selected cities in California and it therefore becomes pertinent, but merely as a demonstration of the fallacy of such arguments, to cite other comparative rates.

Quebec Excels Ontario

In the Province of Quebec, power is served by private companies under regulation and the private companies there pay taxes. The average capital cost per horsepower in Quebec is nearly a third lower than in Ontario. The average annual revenue per 1,000 kw-hr. of output is \$8,476 in Quebec as against \$12,819 in Ontario; and if taxes were charged in Ontario the rates would have to be at least 15 per cent higher. The average kw-hr. output per employee is twice as great in Quebec as in Ontario which would seem to imply that Quebec systems were twice as efficient as the Ontario system.

California Leads Nation

So, it seems to me, the proponents of the California Water and Power Act have failed to make out an affirmative case for their proposal. But even if their arguments were sound there are positive objections to the measure that to me seem overwhelming.

To start with, California as a whole is supplied with all the electric power the economic welfare of the companies and consumers warrants notwithstanding the fact that the drought has caused some temporary enforced economy in the southern part of the state. The net increase in the production of electricity by water and steam in California has been 36 per cent over 1920 and the output of hydro plants alone increased 60 per cent in 1923 as compared with 1920, which is three times the increase for the United States. The reports of the Geological Survey show that in 1923 the hydroelectric output in California was 15 per cent greater than in New York and that it was 21 per cent of the hydroelectric output of the entire United States. Investments in the power business, whether under public or private auspices, must be made with some thought of the ability of the public in the territory to pay a return on the investment; and the consumers cannot afford to pay a return on capital expenditures for plants that are needed or useful only at the end of long dry periods.

The bonded debt of the State of California (not including that of any political subdivisions) is less than \$100,000,000 but is larger than the bonded debt of any state except two. To increase that debt by \$500,000,000 would be economic insanity. California rates for electricity are the lowest in the United States. It is by no means certain that the power business operated by the state would not result in losses under political management. This state is paying about all the taxes it can bear. Why, then, should we take a chance on greatly augmenting our taxes? Taxes today are a more serious problem than bills for electric current. Besides, we get value received for the current bills, and we are not by any means certain that we get value received for the taxes.

Should the state borrow \$500,000,000 by issuing tax-free bonds, and invest that money in property which would then on account of being public property become tax-free, the result would be that \$1,000,000,000, of money and property, on which taxes are now paid, would become exempt; and the tax burden on other property would become proportionately heavier. When sources of the state's revenue are cut off the state does not diminish its expenditures; it merely finds some other source of revenue by laying additional taxes on other taxpayers.

About \$7,000,000, or nearly a fifth of the total revenue of the state, is paid annually by the power companies in taxes to the state. To cripple the power companies with state competition would certainly impair the state's revenue to a large extent; and the lost revenue would be made up by increased taxes on other taxpayers.

In short, we do not need to put the state into the power business and we cannot afford to do so.

Government in Business

Let me close with a general remark on the danger of such proposals for embarking government in business. The function of government is not business but government. If the state should go into the power business it should go into many other kinds of business—insurance, cattle, meat, sugar, farming, mining, oil, railroading, banking, and journalism. Every reason urged for state operation of the power business is as good a reason for state operation of any other important business. Electricity is a less formidable item in the household or the industrial budget than many other articles. Why begin with power? Why not begin with office buildings or banks? Be sure, that if we begin with power, and do not go broke, we shall not end with power. The men who advocate the California Water and Power Act, for the most part, would advocate any measure for the state control of industry except, of course, the particular industry in which their money happens to be invested. Whether or not they acknowledge or even realize it, they are in principle opposed to the institution of private property and they are doing their best to destroy it through taxation which is the only method by which, under our constitution, private property can be taken by due process of law **without compensation.**

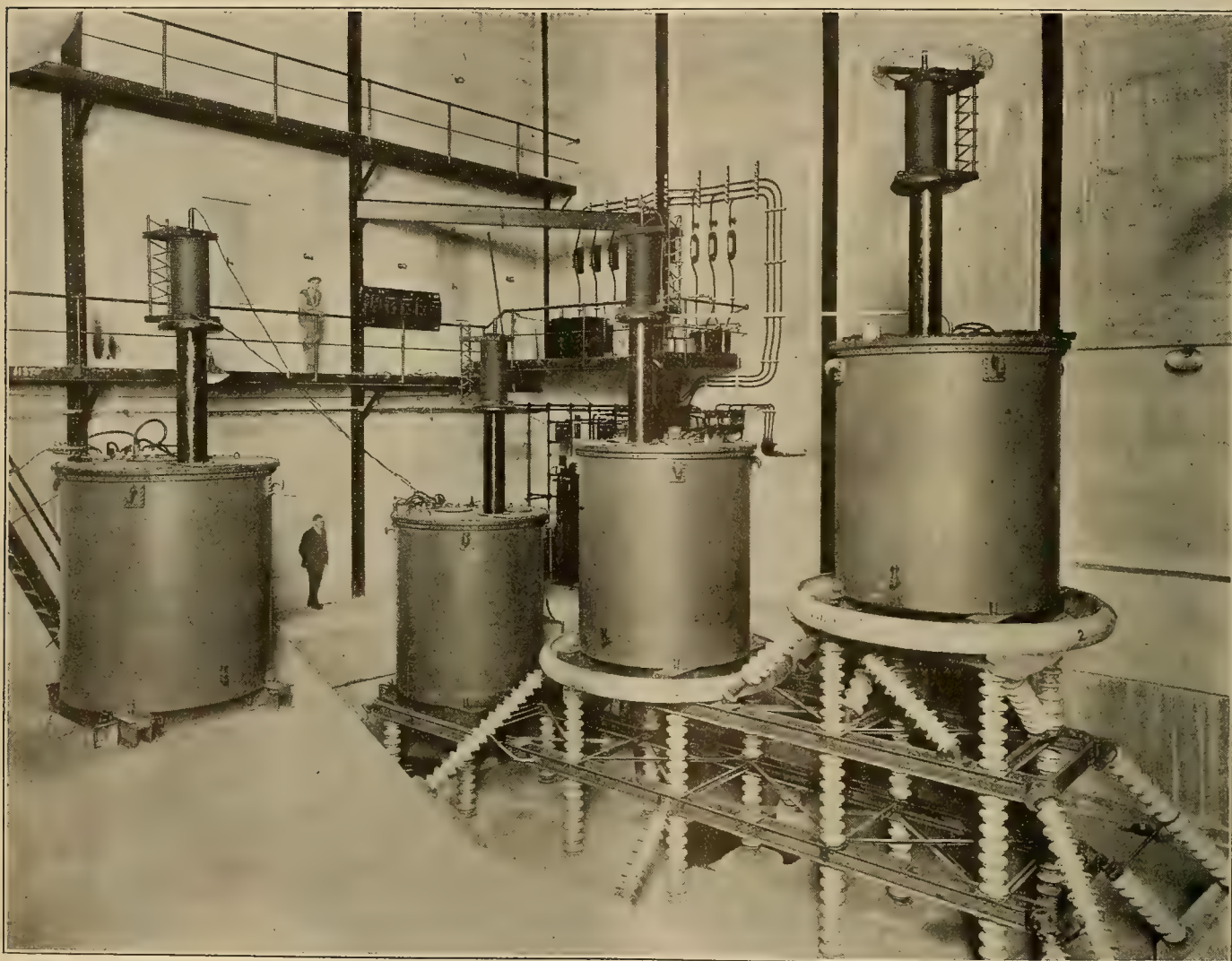
California Institute of Technology's Million-Volt Laboratory

By Royal W. Sorensen

Professor of Electrical Engineering,
California Institute of Technology, Pasadena, Calif.

CALIFORNIA'S precedence in the development of high tension transmission to a point where 220,000 volts is being successfully employed by two of the largest utilities in that state has been a contributing factor in the establishment at the California Institute of Technology, Pasadena, of the only million-volt laboratory outside of those maintained

tion which, while of much interest, seemed to have little practical value at that time. Less than a year later the growing demand for higher voltage transmission lines in southern California, combined with the lack of a really high voltage laboratory near the Pacific Coast, resulted in the conception of a plan for erecting on the campus at the California Insti-



Interior of the recently completed million-volt laboratory at the California Institute of Technology showing the four 250-kva., 250,000-volt transformers and the supporting structures.

by the two large manufacturing companies on the East Coast. The recent completion of the laboratory and the naming of Pasadena as the meeting place for the annual Pacific Coast convention of the American Institute of Electrical Engineers, Oct. 13-19, 1924, is attracting nation-wide interest at the present time.

Almost five years ago, Armistice Day, 1919, to be exact, the author conceived a transformer connec-

tute of Technology a laboratory producing a voltage sufficiently high to supply the demand for many years to come.

The goal set was 1,000,000 volts line to ground. Setting this goal meant the overcoming of much impedance, because up to that time the maximum potential developed between line and ground was just half the amount desired. One million volts between

terminals had been developed by C. L. Fortescue as long ago as 1913. This was accomplished by means of two transformers, producing 500 kv. line to ground, connected in series with the common point grounded as illustrated in Fig. 1.

Correspondence extending over a period of several months having failed to bring forth a satisfactory plan whereby 1,000,000 volts from line to ground could be obtained, the author suggested as a possibility the cascade connection (sometimes called chain connection) which he had developed as has already been stated.

Four Transformers Ordered

As a result of this suggestion, after the working out of many details the Westinghouse Electric & Manufacturing Company agreed to build four 250-kva., 25,000-volt units, each unit to be provided with a primary, secondary and exciting winding as needed to cascade them in such a way as to give 1,000,000 volts total between line and ground. The Southern

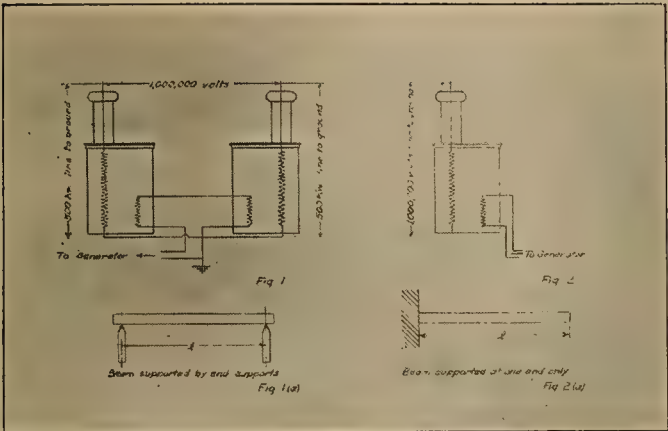


Fig. 1 showing the million-volt connection conceived by Fortescue in 1913.

California Edison Company, acting as sponsor for the laboratory, accordingly ordered the equipment, which was installed in a building erected by the Edison company on the Institute campus.

The first units were delivered in the fall of 1923 and after a year of trying various schemes of insulation between units the completed equipment has been installed as shown in the accompanying photograph.

Insulation between units is obtained by means of racks made up of porcelain insulators and structural steel framework. This was the type of installation originally planned, but abandoned in favor of unsatisfactory redwood stands because of the seeming impossibility at that time of getting a porcelain insulator having the required mechanical strength.

As will be seen from one of the accompanying photographs, the equipment consists of four 250-kva., 250,000-volt units. Unit No. 1 at the left is standing on the floor. Units 2, 3 and 4 are each upon steel frameworks at potentials of 250 kv., 500 kv. and 750 kv. above ground, respectively. These frameworks are separated by insulator stacks as shown in the diagram, each stack being made up of 7 units of Jeffery-Dewitt insulators.

The Electrical Connections

The electrical connections are shown diagrammatically in Fig. 2. Unit No. 1 receives energy from a pair of regulating transformers, each rated 550 kva., 50 cycles, 15,000 to 3,000 volts. With 3,000 volts on each half of the primary of Unit No. 1 there is induced in the secondary a potential of 247,000 volts and in the exciting winding a voltage of 3,000, making a total of 250,000 volts. The exciting winding of this unit is connected in series with its secondary, and is also connected to the primary of Unit

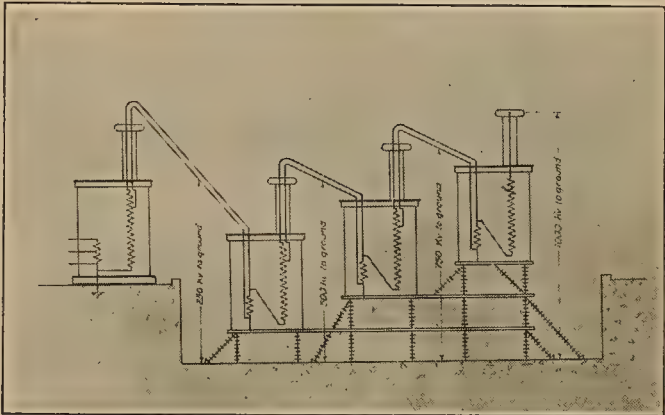


Fig. 2 showing schematic diagram of transformer installation at California Institute of Technology.

No. 2, which is a duplicate of Unit No. 1 but has its primary windings connected in parallel. By this means Unit No. 2 is connected in such a way as to add its voltage to that of Unit No. 1, and so on through Units 3 and 4, there being 1,000,000 volts from the terminal of Unit No. 4 to ground.

Each unit weighs 45,000 lb. and contains 2,950 gallons of oil. To make one of the units required approximately 11,000 lb. of iron and 60,000 ft. of wire.



A view of the 1,000-ft. test transmission line.

The complete rating of each unit is 250,000 volts high voltage, 3,000 or 6,000 volts low voltage, 50 cycles, single phase. Each unit is provided with a 150-300-volt voltmeter winding, one-half of the winding being on each leg of the core.

The regulating transformers receive energy at 15,000 volts and deliver it to Unit No. 1 at potentials varying from zero to 3,000 volts on the secondary of each regulator. The common point of connection between regulator secondaries is grounded, hence the primaries of Unit No. 1, in series, have a maximum potential of 6,000 volts across the entire winding of the transformer, with 3,000 volts from terminal to ground on each half, and on each regulator.

The regulators and switches are controlled by two switchboards, one on the lower observation gal-

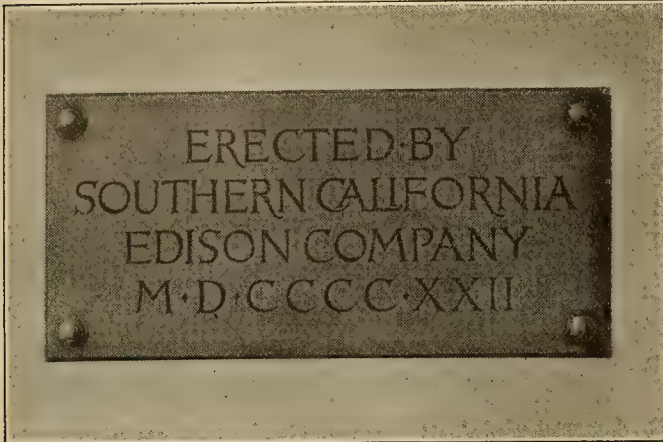
For checking, the voltage of each unit can be approximately determined by means of the voltmeter coils, and as a further check there is provided a crest voltmeter which may be used in connection with the condenser bushing of any unit whose tank is kept at ground potential.

Not the least of the desirable features of the cascade connection is the possibility of having two, two-unit equipments good for 500,000 volts with two units in cascade, or of connecting the high voltage windings of these units in star, thus obtaining 433,000 volts three phase.

Many other combinations, of which the following are illustrative, may be obtained: 1,000,000 volts between terminals, center grounded; 500,000-volt step up—step down, single-phase system with one end or center grounded as desired.

Building Characteristics

The building housing this equipment is of class A construction. It has a fabricated steel frame imbedded in reinforced concrete.



Inscription inside of the door of the laboratory.

lery and one on the main floor. Either board may be used or the transformers may be separated and one board used for each part of the equipment.

The switches in the regulating transformers are operated by a direct current motor equipped with an armature rheostat for speed control. Combined with the switches is a small induction regulator which works in conjunction with them to give absolutely a smooth change in voltage without any evidence of irregularities.



East elevation of the laboratory showing the immense doors through which the transformers are connected to the test line.

One picture shows the east elevation with its doorway 40 x 45 ft., through which a high voltage transmission line may be connected to the 1,000,000-volt transformer.

Opposite the end of the room where the transformers are located is an office, a lavatory, a photographic dark room and a store room for small apparatus. The roof slab of these rooms furnishes a large floor upon which is mounted a 20-kw. Poulsen arc set for obtaining power at high frequency. On a level with the ceiling of these rooms (15 ft. above the floor) is a runway or observation gallery along the entire west side of the building. There is also an observation gallery at the 30-ft. level along the wall, and there is a runway built in the roof trusses directly over the center of the room. The floor is 64 x 138 ft. in area and the lower members of the roof trusses are 48 ft. above the level of the floor.

Adjoining the east side of the laboratory there is available a transmission line 1,000 ft. long, for use in making tests requiring such a line.

Demonstrations of the equipment will be made before engineers attending the convention of the American Institute of Electrical Engineers later this month.



General view of the million-volt laboratory showing the Norman Bridge Laboratory of Physics on the left.

Voltage Measurement

The problem of measuring the voltage of this equipment is a large one, at present the total voltage being measured only by a 100-cm. sphere gap voltmeter.

Winning Public Good Will Is Theme of Glenwood Springs Convention

By S. W. Bishop

Executive Manager, Denver Electrical Cooperative League, Denver, Colo.

A dominant theme of public relations based on generous and constructive suggestions, many of them concerning utility employees and their training, and reflecting for the first time the active participation of women organized in an effort to "win the public," pervaded the annual joint convention of the Colorado Public Service Association and the Rocky Mountain division of the N.E.L.A. at Glenwood Springs, Colo., Sept. 15-17, 1924. It was the twenty-first annual gathering of the former association and the fifth meeting of the latter and a new record for attendance was established with 188 registrants, of which about 60 were women.

With a twelve months' background that evidenced a growing activity in municipal ownership and operation in the Mountain region and with a consciousness of the state ownership propaganda being spread further to the West, spirited interest was evidenced in the various papers and discussions but the underlying strain was one of constructive development on the part of privately owned companies rather than in the devising of ways and means of a negative character to meet the evil.

Chief executives of all the large utility companies in the region were present and Ernest Stenger, receiver for the Denver Tramway Company, in a talk on "The Present Trend in Regulation of Public Utilities" hit a keynote, judging from the popular approval when he said that the trend of yesterday is reflected in the regulations of today and that there was little use for utility operators to complain if they failed to regard the trend of today and the results it would bring later.

"We have waited until too late to receive benefi-

Convention Sidelights

D. L. Webb, counsel for the Public Service Company of Colorado, copped the golf honors as did Rodney Bardwell, of similar company capacity, last year.

Norman Read in addition to his position as president of the Rocky Mountain division, N.E. L. A., qualified as a swimming instructor for ladies in green suits.

Who was it that knocked on the door of Clare Stannard at 3 a.m. with one of the very same canes which his company so graciously donated?

Jack Clay, manager of the Western Colorado Power Company, in addition to bringing all his district managers to the convention brought his family. Some ventured to ride in Jack's "Nash" with 4 wheel brakes.

"Imported Salomi" on the bill of fare of the Hotel Colorado proved to be a typographical error and not a bizarre entertainment as contemplated by Jack Greenawalt.

Sam Doane, chief engineer of the National Lamp Works and honorary vice-president of the Colorado Public Service Association, was in attendance as in former years.

As a moving picture camera man, Billie Sterne made a good utility operator, banker and druggist. The convention film may be shown next year—then again it may not.

John Cooper and "Mrs. John" arranged the splendid entertainment at the convention and still found time to attend sessions.

Art Prager of Albuquerque brought his bride to the convention, also a New Mexico war-whoop, easily discernible any hour of the night.

Every utility man learned what a demagogue was after listening to the forceful address of Charles R. Brock on "Americanism and Its Greatest Menace."

While Al Cornell of the Western Electric Company negotiated 39 holes of golf in one day, Ken McIntyre of the S.E.D. turned in a card for three less dances at night.

cent influence. A splendid example is observed in the railroads. Influences working against them, especially through employees, are undoubtedly due to the errors of by-gone days. The greatest system of transportation in the world is in jeopardy due to the crystallization of sentiment of those very same days. Other utilities can profit from this unfortunate experience of the railroads and regret the day when a flood of regulations came from the announcement of the alleged 'Public-be-damned policy.' Justness from the public is absolutely reciprocal with that of the utility company."

This trend of thought was given further definite expression later on the program but from a different angle when Dr. S. K. Loy, mayor of Casper, Wyo., metropolis of that state, and a prominent executive of the Midwest Refining Company, approached the problem from the viewpoint of the consumer and municipal executive. Not in the

form of advice but as a definite statement he said that utility companies must reach down to the level of the common mass.

Dr. Loy, a former faculty member of the University of Wyoming, compared the operations between public and privately owned utilities and to the latter he gave full credit, although he made the charge that most public service companies have too much red tape in dealing with the public.

Following the precedent established at the recent convention of the Wyoming Utilities Association, invitations had been extended to the public to attend the sessions of the convention. As a result a number of customers from western Colorado towns were in attendance. Due to the length of the program general discussions were not feasible but a

healthy interest in every paper and talk was manifested by the visitors.

Norman Read, vice-president and general manager of the Colorado Power Company, merged with the Public Service Company of Colorado, in his opening remarks as president of the Rocky Mountain division said that no longer are conventions given over to technical discussions, for now the problem is one of mutual betterment and improved relations and this development has given a place to women in the utility industry. He added that although their work was comparatively new it was pioneering—with a number of trail-blazers present.

Although these remarks were not used as an introduction of the particular speakers, conventionites deemed them apropos for the group which included Miss Sarah Sheridan, vice-president and manager of sales, Detroit Edison Company, Mrs. Florence E. Tate, secretary of the Kentucky Hydro Electric Company, Louisville, Ky., who represented Miss R. E. McKee, chairman of the national woman's public information committee, and Miss Inez Thompson of the Public Service Company of Colorado, Denver, chairman of the woman's public information committee in the Mountain division.

In addition to appearing on the general convention program, they took part in the separate meeting of the women's committee, which was featured at the convention for the first time. All ladies of the convention, whether directly connected with the utility business or otherwise, were urged to attend this session. Further discussion of their particular problems and plans for development and further organization during the coming year were considered.

Miss Sheridan, a nationally known figure in the utility industry because of her achievements in commercial lines, presented a paper on "A Sales Department Organization" based on the arrangement in her own company. Because of the sales department's constant contact with the public she explained why it was deemed advisable to charge that department with many functions which other companies allotted to the engineering and operations or accounting departments.

"The Woman Employee and Public Relations," the subject of Mrs. Tate's address, injected a common sense angle of interest in the convention deliberations. Mrs. Tate said that the woman's problem in industry is to help and owing to her special fitness all that she wants is the opportunity to demonstrate it. She added that the success of a national program has as its first essential the cooperation of all utility executives. Prompt, courteous, dependable service being the objective of utility companies, the aim of the woman's committee work is to tell this story of service intelligently to the public, she said, and added the suggestion that one of the most effective means of studying this problem was through a round table consideration by company women.

Herbert Metz, publicity manager of the supply department of the Western Electric Company, in his paper on "Advertising and Good Will" made a plea for a better understanding of advertising and cautioned that utility men should not conceive it as an

exact science and that due to other interests advertising could not be considered as static; also that to obtain proper results qualified personnel was absolutely essential. He said that a discontented customer could do more harm than any amount of advertising could do good and for that reason it was desirable to look well to the employees in contact with the public. Reference was made especially to those having frequent contact with customers.

Another major feature of the convention was the discussion pertaining to the national Home Lighting Contest and the results obtained by Clare N. Stannard, vice-president and general manager of the Public Service Company of Colorado, who is serving as director of the tenth regional district. Fifteen additional communities, chiefly in Wyoming and New Mexico, were lined up to participate in the activity and the finishing touches were given to the plans of operation of various Colorado companies in over forty communities. Kenneth A. McIntyre of the Society for Electrical Development represented the Lighting Educational Committee and had a place on the program.

Mr. Stannard, assisted by Charles A. Semrad, Colorado state director, arranged two meetings in which executives from every lighting company represented at the convention participated. Advertising, prizes, schemes of organization, cooperation on the part of educational authorities and other subjects were discussed. A further result was the voluntary offer of Arthur Prager, manager of the Albuquerque Gas & Electric Company, to further stimulate interest in the campaign in New Mexico. He immediately made arrangements for an early meeting of the principal companies in his state to decide on final details of operation.

Grant E. Halderman, chairman of the Public Utilities Commission of Colorado, in his paper on "The Certificate of Public Convenience and Necessity" traced the chronology of this important requirement and cited the principal cases coming before the commission, especially that concerning the situations in Holyoke and Loveland where the courts recently construed the rights of a municipality as opposed to commission rulings. The principal point brought out was that under proper regulation privately owned utility companies should have equal footings as to rights with municipalities.

Officers elected to assume their respective positions July 1, 1925, in the Colorado Public Service Association are: president, W. P. Southard, manager Trinidad Electric Transmission Railway & Gas Company; first vice-president, Edward A. West, general superintendent, Denver Tramway Company; second vice-president, E. F. Stone, assistant general manager, Southern Colorado Power Company; third vice-president, J. F. Greenawalt, publicity manager, Mountain States Telephone & Telegraph Company; secretary and treasurer, O. A. Weller, budget director, Public Service Company of Colorado. Members of the executive committee: C. N. Stannard, Public Service Company of Colorado; H. S. Robertson, Denver Tramway Company; F. H. Reid, Mountain States Telephone & Telegraph Company; W. N. Clark,

Southern Colorado Power Company; J. A. Clay, Western Colorado Power Company.

Officers elected by the Rocky Mountain division, N.E.L.A., for the same period are: president, Charles A. Semrad, commercial manager, Public Service Company of Colorado; first vice-president, Arthur Prager, manager Albuquerque (N. M.) Gas & Electric Company; second vice-president, Clare N. Stannard, vice-president and general manager, Public Service Company of Colorado; third vice-president, E. P. Bacon, manager Natrona Power Company, Casper, Wyo.; treasurer, A. C. Cornell, manager Western Electric Company, Denver. O. A. Weller, Public

Service Company of Colorado, Denver, was re-appointed secretary.

All convention arrangements were for the first time placed in the hands of one man as general convention chairman. E. A. Phinney, former president of the association and operator of the Jefferson County Power & Light Company at Golden, Colo., assumed this role and had as his assistants A. C. Cornell and O. A. Weller.

Chairmen of the principal convention committees were: F. F. McCammon, Publicity and Attendance; J. F. Greenawalt, Program; C. C. Johnson, Transportation; and John J. Cooper, Entertainment.

Water Conservationists—More Power to 'Em

Second of the Byproducts of Conventions

By Wm. A. Cyr

ATLANTIC CITY, the National Electric Light Association, and the Eastern sideboard were blessed by the falling of gentle rains from the great heavens above—as a politician would express such a simple fact. Anyway it rained. Not so the great Southwest, where men are men.

Oil stockers and other superlugubrious advertisers have had rather unlubricated sledding of late, due to the efforts of the Better Business Bureau boys. In fear of a Senate investigation or something, Nature evidently decided that "truth in advertising" should actually be applied to the Los Angeles Chamber of Commerce climate data. At any rate, "It Ain't Gonna Rain No More," it seems, in sunny California.

Such a condition could not but move a tender-hearted convention. Surrounded by water (salt), in a city well provided for by full reservoirs, steam power plants and mountain dew from the mesquite hills of Baja California, the mathematical principle of inverse ratio just up and took its course. The result was delightfully moist. In fact some of the delegates went around in a southern California high fog all during the convention.

Next to golf—and even threatening to eclipse the great open spaces—the chief distillation of a convention is liquid, very aqueous, I should say. One might even go so far as to remark that the internal condensation exceeds all scientific measurement.

And the reason—as if reason were necessary, certainly excuse isn't—is not far to seek. It is not the dry year which moves a conscientious convention to beers,—I mean tears. Nor is it necessarily the late Sir Volstead's prohibitory restrictions, nor that the latter's arch enemy, John Barleycorn, seems somehow to be one of those theosophical souls, always reincarnating as somebody else—varnish, or shoe polish, you know, or possibly "electric light globes."

Golf, God bless it, isn't an only love. Vamp

though it is, the harassed heart of a conventioner is not altogether satisfied with its love putts. And then, too, there are many who have never looked upon her fairways. Is it something in the downright "innards" of a hard working, hard thinking, hard playing delegate—away once in a year from the killing kilowatt—that howls for a chance to upset the works? Is it that under the seductive precipitation of mountain dew, there steals over the burning, feverish prime-mover in the world's electrical progress, over the delegate, if you please, the feeling that:

If a watt is anything, watt is it?

What difference does it make if there aren't any load factors on coffee percolators and ice boxes?

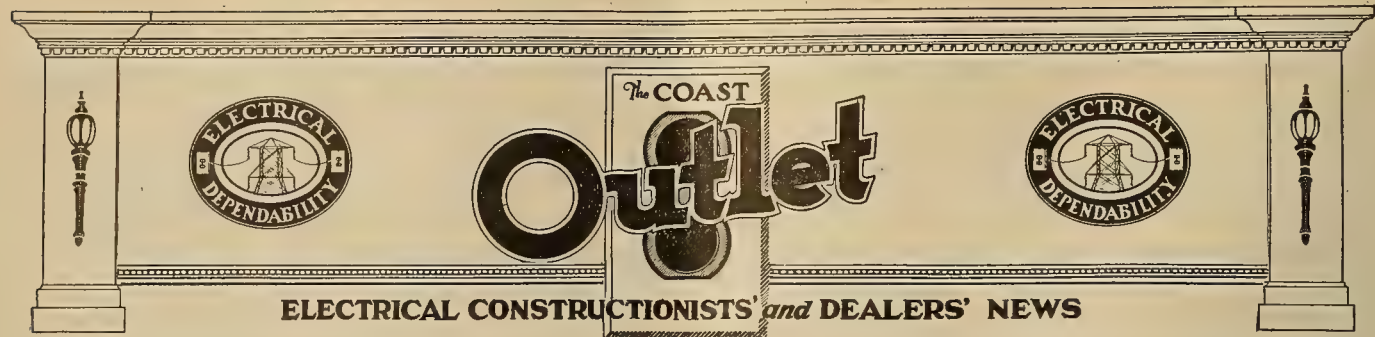
If pole butts get eaten up by termites, why bless 'em, let the poor li'l suckers have a good feed, watcha crabbin' bout?

If the people want overhead sewers, I mean underground politics, no—you know watt I mean—'stead of power plants, let 'em vote the Water 'n Power Act, see 'f I care.

In different and perhaps less misty moist words, the delegate seeks to shut down the human dynamo for a week and just let it go hang. As long as he stays above the water line, he is sure to worry over the whyness of the watt, power factors on ice boxes, apartment house for white ants in pole butts, Water and Power politicians and other "varmints."

Complete anæsthesia seems to be the only means whereby the victim may amputate his thoughts. And so he opens up a few "electrical instruments—handle with care" with his cronies, and the fog rolls in from the ocean.

Hold on—is it the only means? Come with this dryad to an investigation of that last and until now least of the byproducts of conventions,—Song, and its half-sister, Humor,—where there may perhaps be found a less "squoozy" means of intoxication and one wholly as complete.



A Practical System of Accounting for Contractor and Dealer

By F. V. Mitchell

AFTER all the postings are made into the General Ledger, a trial balance is drawn off by listing the debit and credit balances of accounts Nos. 1 to 52, inclusive, as they appear at the end of the month. The total of the debit balances should equal the total of the credit balances, which constitutes a final proof of the correctness of the postings into the General Ledger for the month.

SUMMARY OF FIXTURE									
JOB No.	NAME	LOCATION	SELLING PRICE		%	LABOR		%	MATERIAL
476 F	VARIOUS		22500		100	3800		17	7700
477 F			12500		100	2100		17	4400
478 F			17500		100	3000		18	6000
479 F			17500		100	3100		18	6400
480 F			27500		100	4800		18	9700
481 F			22500		100	4000		18	8000
482 F			20000		100	3500		17	7000
483 F			13800		100	2100		15	4100
484 F			10000		100	3100		16	6900
493 F			16200		100	3000		19	5100
TOTALS			190000		100	32500		17	65300

Fig. 2.

As previously stated, it is not necessary to take the Overhead Expense Accounts into consideration in the trial balance for the reason that these amounts are included in the Cost of Goods Sold Overhead Account—No. 52 C, and Work in Process Account—73) to eliminate the necessity of making a separate posting to each individual Expense Account, and at the same time to provide an account in the General Ledger that shows the actual amount expended for Overhead Expenses for the number of months in the

TABLE II
Profit and Loss Statement
For Eight Months—January 1 to August 31, 1924

	Total	Per Cent	1	Per Cent	2	Per Cent	3	Per Cent
Sales	\$72,500.00		\$46,500.00		\$19,000.00		\$7,500.00	
Less—Return and Allowances.....	2,500.00		1,500.00		1,000.00		500.00	
Net Sales	\$70,000.00	100	\$45,000.00	100	\$18,000.00	100	\$7,000.00	100
Cost of Goods Sold:								
Material	30,900.00	44	20,000.00	44½	6,000.00	33½	4,900.00	70
Labor	13,000.00	18½	10,000.00	22½	3,000.00	16½		
Total—Material & Labor Costs.....	\$43,900.00	62½	\$30,000.00	66½	\$ 9,000.00	50	\$4,900.00	70
Gross Profit	\$26,100.00	37½	\$15,000.00	33½	\$ 9,000.00	50	\$2,100.00	30
Overhead Exp.	19,100.00	27½	10,500.00	23½	7,200.00	40	1,400.00	20
Net Profit	\$ 7,000.00	10	\$ 4,500.00	10	\$ 1,800.00	10	\$ 700.00	10
Percentage of Overhead to Material & Labor Costs		43½		35		80		28½

No. 15, having been transferred by journal entries monthly to the debit of the two latter accounts.
The credit entry in effect closing out the Overhead Expense Accounts monthly is made in total to Overhead Expense Clearing Account (group 60 to calendar year to date. The amount in the Cost of Goods Sold Overhead Account—No. 52 C, charged to Profit and Loss will not be the same as that appearing in the Overhead Clearing Account for any given period, as the former will always include the over-

Finished During May, 1924

TOTAL E. COST	%	GROSS PROFIT	%	OVERHEAD	%	NET PROFIT	%
11500	51	11000	49	8775	39	2225	10
6500	52	6000	48	5000	40	1000	8
9000	52	8500	48	6650	38	1850	10
9500	54	8000	46	6825	39	1175	7
14500	53	13000	47	10450	38	2550	9
12000	53	10500	47	9000	40	1500	7
10500	52	9500	45	7600	38	1900	10
6200	45	7600	55	5175	38	2425	17
10000	50	10000	50	7800	39	2200	11
8100	50	8100	50	6075	38	2025	12
97800	51	92200	49	73350	39	18850	10

Fig. 2.

The sheet for this portion of the work would be headed as shown in Fig. No. 22.

For intercommunicating systems it is generally preferable to use a standard cable with a dry braid if not subject to moisture, or lead encased cable if moisture is likely to exist. The advantages in the use of this material are that the size of conduit is materially reduced and the wires are all paired.

vided. A sample of sheet to take care of this installation is shown in Fig. 23.

In the case of wiring for auto call, fire alarm and clocks there is usually a multiple or series circuit run to each outlet except there be a number of clocks, in which case there will be two or more series circuits. In the case of schools, with program clocks and secondary clocks with buzzers in each class room

PUBLIC PHONE SYSTEM

1/2" 3/4" 3/4" 1" 1" 1-1/4" 1-1/4" 1-1/2" 1-1/2" 1-1/2" 1-1/2" 1-1/2" 1-1/2" 1-1/2"

1 pr 2pr 3 pr 4 pr 5 pr 6pr 7pr 8pr 9 pr 10pr 11pr 12pr 13pr

East Section	2nd Floor
West "	2nd "
East "	3rd "
West "	3rd "
East "	4th "
West "	4th "
East "	5th "
West "	5th "

Fig. 22

thereby eliminating all work of testing as would be necessary if the usual twisted pair telephone wire were used.

With this system a single column only is necessary as, of course, the same size conduit and cable is carried from phone to phone. For the silent signal system there will be a number of column headings

and assembly and yard gongs, additional wires must be installed in the conduits to provide for these signals in addition to the regular series circuit for the clocks.

The principal thing in estimating on any part of a job is to keep the records so that anyone can take up your estimate sheets if a contract is pro-

SILENT SIGNAL SYSTEM

2#10 2#10*10 2#102#10 2#102#14
~~2#16 4#10 2#10 2#10 2#10 2#10 2#10 2#10~~

East Wing 2nd Floor
Center " 2nd "
West " 2nd "
East " 3rd "
Center " 3rd "
West " 3rd "
East " 4th "
Center " 4th "
West " 4th "

Fig. 23

as it is common practice to use No. 10 B. & S. gage for the current leads from the transformer through all outlets in rooms and wards with No. 14 B. & S. current leads branched to door and corridor signals and No. 16 B. & S. signal wires in both cases. Also the special branches to diet kitchens, head nurse's room, for the elapsed time recorder must be pro-

cured and proceed to lay out the plans and assemble the materials. This cannot be done if all the details as above outlined and as explained in previous issues are not kept as a part of the record instead of written on a piece of scratch paper and then thrown away prior to the time that the job is started.

Annual Convention of California State Association

Report of Meeting Held at Santa Cruz, Sept. 19-21, Shows Growth of Cooperative Spirit and Value of United Effort

The annual convention of the California State Association of Electrical Contractors and Dealers was held at the Casa del Rey Hotel, Santa Cruz, Calif., Sept. 19-21. Members from all parts of the state were in attendance as were invited guests and others who were interested in the work of the association. The meeting opened on Friday, Sept. 19, registration of arrivals having taken place the day before.

Starting at eight o'clock on Friday morning the annual golf contest was played off. There were thirty entrants and play was spirited and marked by excellent form. C. C. Hillis, Jr., of the Electric Appliance Company, San Francisco, took first place and won the cup for the best play. So close was the contest for second place that four players were tied and had to play off for the place prize. In the final play-off Charles Goodwin, credit manager of the Pacific States Electric Company, San Francisco, was winner by one stroke on the eighteenth hole. The second prize was a choice of one autographed driver or brassie, to be selected by the winner.

There was also a golf contest for the ladies who attended the convention and Mrs. Arthur Dahl won first prize, defeating the next player, Mrs. C. B. Kenney, by two strokes. Mrs. Kenney won, as second prize, an autographed brassie or driver, at her selection. This prize, like the second prize in the men's contest, was donated by "Chubby" Gerhardt, of the Crouse-Hinds Company's San Francisco office.

The sporting contest that excited the most interest was the baseball game between the contractor-dealers on the one side and the jobbers and manufacturers on the other. C. B. Kenney was captain of the former team while G. W. Barker led the latter. After nine innings of brilliant play, during which many spectacular exhibitions of close team work were given, the jobbers and manufacturers won by the close margin of 12 to 11, the winning run being brought in in the last half of the ninth inning with two men out and three men on base. Following the game a live gray goose was presented to the captain of the winning team to assist him in spreading the news of victory. The ball game was marked by many spectacular events, among which were the frequent change of umpires and the entry into the game of a young lady who displayed brilliant playing form but who insisted on running the bases from home to third instead of to first as is customary. The home run made by this player was the only one made during the game and was disallowed by the umpire.

The executive committee meeting was held at ten o'clock on the nineteenth and was marked by a full attendance. President Victor Lemoge presided.

The open business meeting of the convention began at two-thirty on the afternoon of Sept. 19 and was attended by approximately two hundred persons, all of whom were either members of the association or were interested in its work. Some of those present included members of the Electrical Exchange of

San Diego and also of the Electrical Exchange of Los Angeles. Prominent among these were Amos Feely, of San Diego, and Psy Geisbush, of Los Angeles.

Clyde Chamblin, president of the California Electrical Construction Company, San Francisco, described the work of the Association of Electragists, International, and told of an unusual opportunity that had been extended to the California association to become affiliated with the larger body. By unanimous vote it was decided to join with the national organization and this action will be taken in the very near future.

Following the address of Mr. Chamblin President Victor Lemoge announced a series of ten-minute talks on subjects of interest to all present. Contrary to the precedent of previous years, when the speakers had been selected from outside the ranks of the association, all of the speakers at this meeting were from the membership.

E. E. Browne, executive secretary of the Electrical Contractors' and Dealers' Association of San Francisco, spoke on Estimating. Among other points Mr. Browne brought out the need for the use of the "contract bid" form for the protection of the contractor. This form of bid requires the signature of the one accepting the bid and is, in effect, a lease contract, the contractor being protected until the full amount of the contract is paid.

Walter Spencer, of the Spencer Electric Company, Oakland, Calif., spoke on Residence Wiring and emphasized the importance of strenuous effort by every contractor-dealer to have all buildings, and particularly residences, properly wired for the fullest possible use of electricity. H. H. Courtright, manager of the Valley Electrical Supply Company, Fresno, spoke on Lighting and Lighting Fixtures and presented some new thoughts for fixture dealers. J. C. Hobrecht, of J. C. Hobrecht Company, Sacramento, spoke on Radio and sounded a warning to electrical retailers. Mr. Hobrecht also gave some pertinent ideas on the marketing of radio by retail electric stores.

C. B. Kenney spoke on Credits and analyzed the situation from the viewpoint of the contractor and of the jobber and pointed out in detail the relationship that should exist between the two. He also made a plea for closer attention to the financial side of the contractor-dealers' business and predicated a company's success only on a proper consideration of this matter. G. W. Barker, associate editor of the Journal of Electricity, gave a short talk on events that have taken place in the Modesto-Turlock Irrigation Districts since the opening of the Districts' generating and distribution system, followed by the entry of the Districts into the retail electrical field. Victor W. Hartley, executive secretary of the California Electrical Cooperative Campaign, gave an outline of the state organization of the Better Lighting Campaign and told of the work that has been done thus far in promoting the

campaign in the Twelfth Regional District.

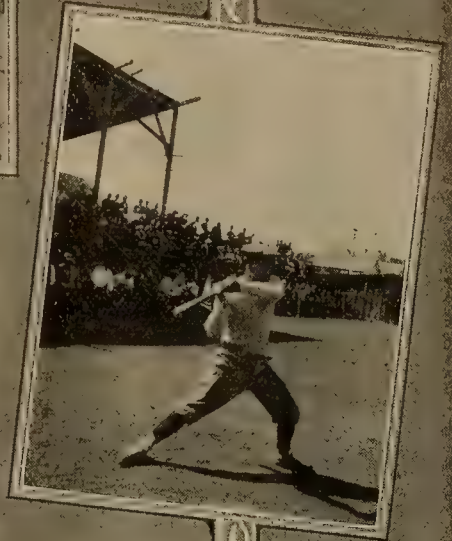
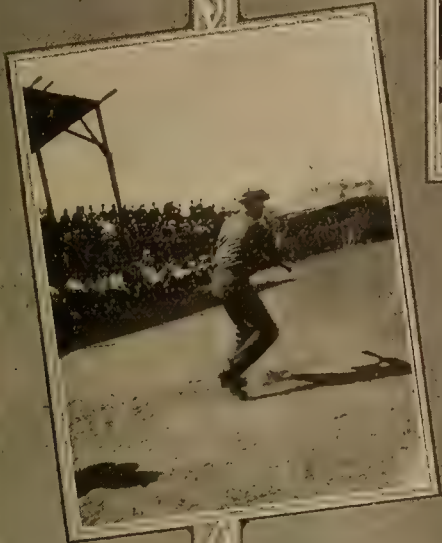
Following the main business meeting a second meeting was held under the auspices of Hugh M. Crawford, sales manager of the Pacific Gas and Electric Company, San Francisco, for the purpose of outlining in detail the plans and progress of the Better Lighting Campaign. This meeting was largely attended and the talk was illustrated with lantern slides.

One of the outstanding addresses of the meeting was that of Reed Hayes, of the Eureka, Calif., Chamber of Commerce. Mr. Hayes told of the activities of the California State Fish and Game Commission to prevent development of the Klamath River power resources. He showed clearly the detrimental effect this opposition to development is working on the entire section of the state that would benefit by an intelligent plan of procedure. Mr. Hayes also gave evidence of the assurance of the Federal Power Commission that the fish of the Klamath would be protected in the event of licenses being granted for power construction and development and pointed out that the action of the California commission is detrimental to the best interests of the whole state.

Following a short talk by H. W. Stitt, city electrician of Fresno, there came the election of officers for the ensuing year. By an unanimous vote Victor Lemoge was re-elected president and the following were elected directors of the association: H. H. Courtright, Fresno; A. K. Carson, Bakersfield; W. A. Murphy, Stockton; J. C. Hobrecht, Sacramento; J. Helfiker, Eureka; H. W. Jacobs, Santa Rosa; Earl Wilson, Napa; Ed. Martin, San Francisco; Fred Doerr, San Jose; Walter Spencer, Oakland, and Walter Cox, Santa Cruz.

The annual banquet was held in the main dining room of the Casa del Rey Hotel at six-thirty, Saturday, Sept. 20. More than two hundred and fifty people attended. President Lemoge officiated as toastmaster and introduced the various speakers. He also made a brief report on the activities of the association during the past year. Arthur Dahl presented the cups won during the sports contests. The Journal of Electricity cup for attendance was presented to Roy Phelan, secretary of the Electrical Contractors' and Dealers' Association of Sacramento. This cup is presented annually to the association having the greatest membership attendance at the convention and has been won by the Sacramento organization for the past four years. J. T. Stewart, of the Stewart Electrical Manufacturing Company, San Francisco, offered a trophy to the captain of the losing team in the baseball game and this trophy was presented by G. W. Barker to C. B. Kenney, who was captain of the contractor-dealers' team. The trophy will be awarded annually. Clyde Chamblin was the speaker of the evening and gave a strong talk on the application of the golden rule to business and on being square.

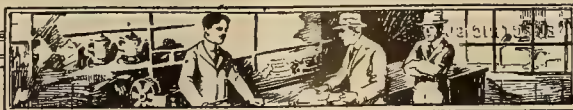
As a testimonial of appreciation to President Lemoge for the splendid progress made by the association under his direction, presentation was made to Mrs. Lemoge of a beautiful silver set. Mrs. Lemoge made a short address of thanks.



IN the center is chief umpire A. E. Rowe; winning team on right, losers on left; above, left, E. E. Browne, center, F. H. Woodward, right, Al. Heister; bottom, left, Clem Hillis, pitcher, right, Jack Stewart, catcher, of the winning team; center, the only lady player (who later was proved to be none other than Art Dahl in disguise).



JOBBER, DEALER AND SALES AGENT



Exterior of first Tacoma electric home. Over thirteen thousand people inspected the modern electrical devices shown.

Tacoma's First Electric Home Proves Successful

Completely Electrified Home Visited by 13,424 Persons During Twelve-Day Period It Was Open for Inspection

After exhibiting and explaining the advantages of the electrified home to 13,424 guests, in a period of twelve days, the electric home committee of the Electric Club of Tacoma, Wash., on July 3 closed the first electric home exhibited there. Interest in the home had been so intense and results obtained so satisfactory that the club appointed a permanent electric home committee and plans are now being made for next year's home.

Tacoma's first electric home was financed, built and furnished in much the same manner as has been the case in all homes exhibited in the West. The house was built specially for the exhibition by a Tacoma contracting firm which agreed to take the responsibility of later selling it. Wiring supplies and devices were donated by the various local jobbers, and these same firms also supplied the electrical appliances for the duration of the exhibit. All furniture, general furnishings and miscellaneous items were secured from local dealers who cooperated with the electric home committee.

To prepare the public of the city for the opening of the home, newspaper advertisements and inserts in monthly power bills were used extensively by the committee. Funds for this advertising were secured from the jobbers. The advertising fund accumulated also provided for the preparation of a 36-page booklet designed to be presented to all visitors at the home. This book-

let was entitled "Making Every Dollar Count When You Buy a Home," and was distributed during the time that the home was open to the public. This piece of publicity was gotten out in the form of a handbook and presented in a convincing manner the reasons for owning a home. Suggestions were given as to methods of financing, planning and building a home and in the text matter the electric home was completely described as one that could be used as a model. Needless to say, this book attracted considerable attention and was well received by the home visitors.

The home was open to visitors daily from 2 to 10 p.m. and during that time demonstrators, supplied by the jobbing houses interested in the exhibition, were on hand to take parties through the building. The original plan was that the "open house" period should extend from June 22 to June 30, inclusive, but the exhibition proved so popular that the home was kept open until July 3.

The home displayed by the Tacoma electric home committee was completely modern in all respects and electrical devices were largely responsible for this characterization. From the basement where an electric furnace was installed to supply heat for the home, through the kitchen where an electric refrigerator kept food in good condition and an electric range cooked it, to the master's bedroom where a three-

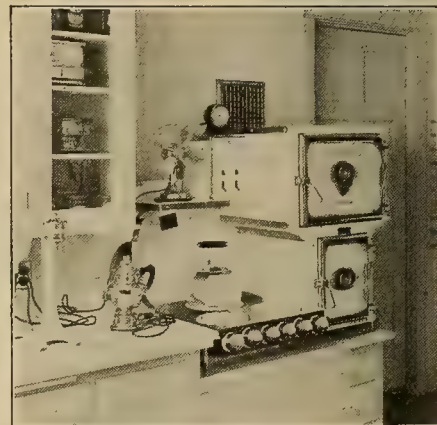
way switch controlled all of the ceiling luminaires in the house, everything was electrified. The advantage of these various devices were demonstrated and explained to the visitors to the Dutch colonial type home, with the result that many inquiries concerning electrical installations have been received by the electrical industry in Tacoma. One of the interesting features of the house



Laundry showing the control panel with twenty-eight circuits.

was the control panel, located in the basement, which had twenty-eight circuits running into it. Thirteen of these circuits were for lighting while fifteen were for power.

The home was a complete success from the point of view of the electrical



The kitchen where everything was electric. Furnace control switches may be seen at the right.

industry and the chairman of the first electric home committee, B. R. Nichols, City of Tacoma Light Department, has been named chairman of the permanent electric home committee.

Small Town Dealer Advertises Service That Sells

The service that the electrical dealer can give to purchasers of radio devices is one of the principal factors that lead the public to buy from him instead of from any other class of retailer. It is evidently then up to the electrical dealer to service these radio customers to the fullest extent possible.

The mapping of a service program is not the only thing, however, that is necessary for the success of the dealer. Some means must be employed to inform the buying public that this service is being offered.

Building its business on service, the Taft Electric Company, Taft, Calif., has found a most satisfactory means of advertising the fact that it does not only sell electrical devices but when the sale is made service is assured to the purchaser. To put this information before the people of Taft, J. S. Miller, manager of the company, has used a small delivery automobile, known as the "Radio Service Car." This machine is of the standard enclosed commercial type but has been specially decorated to suit the needs of the Taft Electric Company.

Radio advertising is used to decorate the sides and rear of the service car and an aerial extends over the entire top of the body. Bright colors are used in connection with the advertisements, thus attracting more attention to the car.

The car in addition to being a constant reminder that the Taft Electric Company is a dealer in radio devices is also used in servicing radio sets. The fact that the radio service car is frequently seen calling at the homes of radio owners again calls attention to the company's service policy and no doubt leads to considerable business for the firm.

To tie the radio service car in with the direct-by-mail advertising of the company, postcards carrying the picture of the car are sent to all prospects of the company. This tie-in has been found to be well chosen.

The Taft Electric Company has also paid attention to details in the arrangement of its store. In the portion of the store devoted to displaying and demonstrating radio sets comfortable chairs have been provided and by keeping only complete sets in this department the customer's attention is focused upon the particular set that is being demonstrated. This arrangement has been found to be well suited to the needs of the company.

SHOUTING AND SAYING SOMETHING
Æsop's Tale Retold

By JOE OSIER

The tale of the shepherd boy, who established a reputation by squawking "wolf" when he became lonesome and had nothing else to do—

Which yarn was released to the daily and Sunday papers some few thousand years ago by the famous fictionist, Æsop—

Is brought to my mind every time I hear a man of the Electrical Industry complaining about high costs of merchandise, cut-throat competition, poor collections and bum business generally.

This practice, indulged in by too many smart men, has been appropriately named "wolfing" and time and again, it has been proved that the business man who stands in front of his place of business and yells "Wolf! Wolf!" loud enough and too often, soon has no place to stand in front of and—

Is forced to join the pack of malcontents who carry the stigma of "once was" and "used to be."

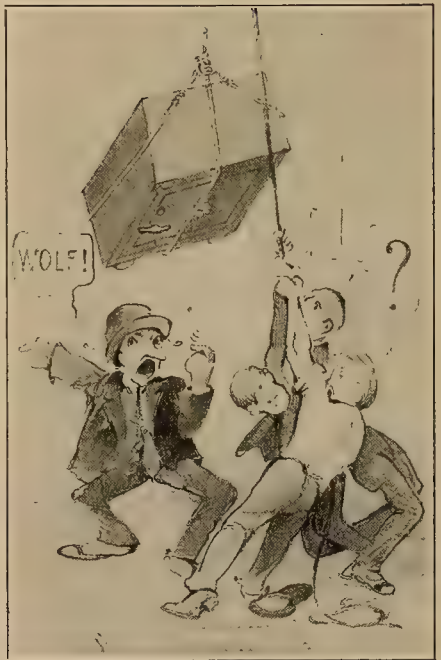
Æsop, in his fable, which has survived throughout the ages, despite the thousands of Jazzy Gems and Juicy Jewels which have been circulated, relates: "And then, after he had fooled them many times, they wearied of his pranks and failed to respond when the wolf did attack."

Does not this tale fit the case of some alleged business man you know? Yea, verily, like the sausage skin.

Ol' John Goofus, a contractor-dealer who retails merchandise electrical, stands in front of his "tumbled-down shack in Athlone" or some other place and, through a loud speaker bellows to the world that—

Prices are shot to the naughty word—pirates are scuttling his ship and he is being sunk without warning; men of the trade are secretly hacking at his vitals and the—

W.K. Wolf is banging at his back door—and—



"Shall we drop our business and help him?"

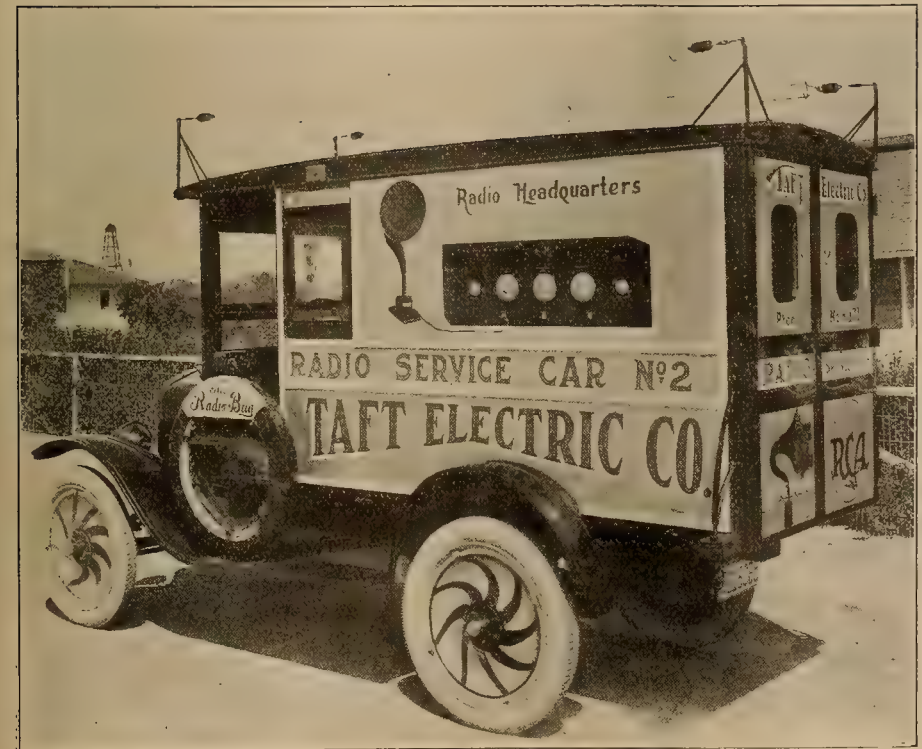
What is the answer? There is none because his former friends in the game have heard the tune before and have grown weary of the sing-song sameness of the symphony.

They prefer listening to the songs of cheer sung by the up-and-doers who are carrying on, garnering the glue and making a go of it regardless of changing conditions.

And so, the hopeless, helpless herder of misconceived delusions, when the real wolf does come, cries for help in vain and the bones of his business glisten in the sunlight and passers-by shudder and hurry on.

So this is the moral: Never shout "wolf" until you are forced to and then—

Mean it.



Radio Service Car of the Taft Electric Company

INDUSTRIAL NEWS



Jobbers' Convention Disrupted by Del Monte Fire

Main Building of Famous Resort Is Totally Razed During Quarterly Meeting of Pacific Coast Jobbers

By Chairman of the "Open" Meeting

Sept. 25 opened what was destined to be the most notable quarterly meeting ever held by the Pacific Coast Electrical Jobbers' Association. This meeting had been postponed many times. As a matter of fact, it was scheduled to have taken place at Coronado during the annual meeting of the Pacific Coast Electrical Association. This idea having proved impractical, the meeting was postponed month by month until finally accommodations were secured at the usual meeting place, Hotel Del Monte, Del Monte, Calif.

The initial meeting took place on Thursday morning, this being a business meeting and therefore closed to all other than members of the association. On Friday morning—a closed meeting—there were two papers presented by men outside of the association. Walter C. Heston, Pacific Coast editor of *Electrical World*, presented to the members of the association the results of a survey covering eight cities in the United States by which it was determined who were distributing electrical appliances. Mr. Heston was followed by George C. Tenney, managing editor of the *Journal of Electricity*, who presented the results of a survey in seven cities of various sizes in Washington, Oregon, Utah and California covering the Pacific Coast phase of the same subject discussed by Mr. Heston.

The discussion that followed was spirited and illuminating. Mr. Tenney's paper will be published in full in the Oct. 15 issue of this publication so a review at this time is not necessary, while Mr. Heston's paper was based upon matter which had appeared serially in *Electrical World* several months ago.

Following the meeting a rising vote of thanks was tendered to Messrs. Heston and Tenney for the excellent work they had done in this connection. It was determined further that the jobbers' association would arrange for the distribution of a number of copies of the discussions to members, with the suggestion that they make these papers the basis of a series of sales meetings within their own organizations. This would aid salesmen to become better informed as to the present day tendencies toward the retail distribution of electrical appliances and be able to meet changing conditions within the trade more intelligently. Distribution of the papers will be in charge of Albert H. Elliott, secretary of the association.

Following this meeting the annual

golf tournament began at Pebble Beach course. Friday night the usual evening festivities were in order. The members indulged in informal dancing and conferences of one kind or another until the wee small hours of the morning. About 2:30 a.m. the smell of smoke in the main building just over the office floor was noticed. Carl Stanley, manager of the hotel, was awakened and he started to investigate. Ray W. Murphy, manager of the Westinghouse Lamp Company, San Francisco, accompanied Mr. Stanley to the upper stories, each man carrying a fire extinguisher, and their investigation showed immediately that the fire, which had started near the roof, was already beyond control. The next problem was to arouse the guests and get them out of the hotel to places of safety. In this work Messrs. Ray W. Murphy, C. C. Hillis, H. E. Sanderson, W. S. Berry, W. M. Deming (who saved all the association golf trophies, including the famous Copper Cup) and many other members of the electrical fraternity played distinguished parts.

An event that was strangely fortuitous occurred. Roscoe Oakes, vice-president and Pacific Coast manager of the National Carbon Company, had brought with him a moving picture machine, which he had used that afternoon taking photographs of a number of the men of the association while engaged in their strenuous athletic endeavors on the golf course. At the alarm of fire Mr. Oakes rendered heroic service in helping to arouse the guests and apprise them of their danger. Although his room was in the main building which was first attacked by the fire, he managed to save the greater part of his personal belongings including the moving picture machine and several hundred feet of film. At four o'clock in the morning, after everybody was safely out of the hotel, Mr. Oakes set up his camera and obtained a wonderful photographic record of the fire at its height and on down to the falling of the last wall that marked the end.

As the alarm spread, the pre-arranged fire signal of six blasts from the power plant siren proclaimed to the slumbering and non-slumbering guests that a great disaster had overtaken this famous old resort and that all had better not stand upon the order of going but get out as quickly as possible. The efforts of Mr. Stanley and the entire hotel staff proved so successful that every guest was aroused

and was enabled to make his or her way to safety on the lawns about the old building without injury. Many of those in the main building had little time in which to make their escape, and therefore lost most or all of their personal belongings. Those in the two wings were more fortunate, for ample time was given them in which to pack—although the packing was in many cases of a very sketchy nature. The shelter of trees about the lawns provided impromptu dressing rooms where guests were able to add finishing touches to toilets which were rather hastily begun under the conditions of stress and excitement. While the embers were still blazing and smoking fitfully Mr. Stanley and his staff opened temporary business headquarters at the entrance of the left wing, and while, at that time, namely, 5:30 a.m., he was hardly able to offer the slogan of "Business as usual," yet before noon of that day the remains of old Del Monte were functioning to a certain degree. Guests were being taken care of in both the west and east wings, and meals were being served at the golf house at No. 1 course.

The fear of fire has always been more or less present at the old Del Monte hotel. This structure was built in 1887, rising above the ruins of a former wooden building which was built in 1860. Now of course, beyond a doubt, the old Del Monte will be succeeded by a modern steel and concrete structure which will stand as a permanent monument to the wonderful traditions of this far-famed resort. Nevertheless, at the passing of the old structure, which had stood for so many years, a very definite something undoubtedly has been destroyed. The atmosphere and associations of the old place cannot help but be lacking in any new building, no matter how magnificent or modern it may be. Nevertheless, the fame of Del Monte rests upon something more definite and more substantial than a mere inanimate building. It typifies perhaps more than anything else in the State of California the spirit of the pioneers and the traditional hospitality of the West. That will continue, as succeeding generations of Californians will tell to their children and their children's children the story of Del Monte, the best loved playground in the world.

Correction Note.—In the article "Electric Power in the Oil Fields," by H. N. Carroll, published in the Sept. 15 issue of the *Journal*, Table III on page 196 should have been captioned, "Cost of Pumping Wells with Individual Motors." These data were compiled by two of the larger companies operating on the P-5 schedule.

Soda Point Plant Is Completed by Utah Public Utility

Work has been completed on the Utah Power & Light Company's power development at Soda Point, on the Bear River, near Alexander, Idaho. This new plant, with an installed capacity of 14,000 kw., is now operating as a part of that company's hydroelectric system.

Actual construction work on this project, with the constant employment of about 600 men, has been under way for the past year and a half. Preliminary engineering work and drilling for bedrock began in the summer of 1922. Two General Electric vertical units of 7,000 kw. each, with Allis-Chalmers turbines, are installed in this plant, and its construction throughout embodies the most advanced features in engineering design.

The dam is 80 ft. in height above the water surface, and about 110 ft. above the deepest part of the foundation. It is 518 ft. long across the top and contains about 45,000 cu. yd. of concrete. At the bottom it has a thickness of 80 ft. and at the top 10 ft.

The storage reservoir is about five miles long and averages three-quarters of a mile in width. At its maximum high level it will extend to a point opposite the town of Soda Springs. This reservoir contains about 12,000 acre-ft. of water, and becomes an important secondary storage reservoir to augment that of Bear Lake, thus increasing the advantages to be gained in the Inter-mountain section through water conservation and equalization of stream flow.

New Steam Unit to Be Installed at Young's Bay Plant

Practically doubling the installed capacity in generating equipment maintained for supplying the Astoria, Ore., district of the Pacific Power & Light Company, Portland, the company is in-

stalling a 5,000-kw. steam unit at its new plant on Young's Bay. The new unit will be a General Electric Company, Curtis type, 11,000-volt turbo-generator, with Wheeler condenser and other auxiliaries. No additional boiler capacity is needed, and the estimated cost of the improvement, which is to be completed before the end of the year, is \$200,000.

The principal fuel burned at the Young's Bay plant has been changed recently from oil to hog-fuel. To do this, a receiving dock was built on the bay adjacent to the plant, and a hoist with clam-shell bucket for unloading was installed. A conveyor, consisting of a cable with disks attached, was erected to carry the fuel to the boilers where dutch ovens were installed supplementing the oil burners. Fuel is delivered to the dock from near-by lumber mills by barge. A supply of oil is kept on hand for emergency.

The original installation at the Young's Bay plant was 3,000 kw. and to supply local demand power was purchased from the Hammond Lumber Company. The Hammond plant was destroyed by fire in 1922 and later that year Astoria was swept by fire. Since the fire the Young's Bay plant, supplemented by the old Astor Street plant with a capacity of 1,575 kw., has been carrying the load. The rebuilding of the city has necessitated the installation of the new unit.

Lectures on Better Lighting Are Prepared.—The Lighting Educational Committee has prepared a series of five lectures designed to be presented before various classes of audiences. The lectures call attention to the Better Home Lighting Contest and give suggestions for the better lighting of homes. Two of the lectures are designed to be used without charts, two with charts and one with slides. The charts and slides may be secured from the Society for Electrical Development.

Arizona Republican Nominee for Governor Favors Compact

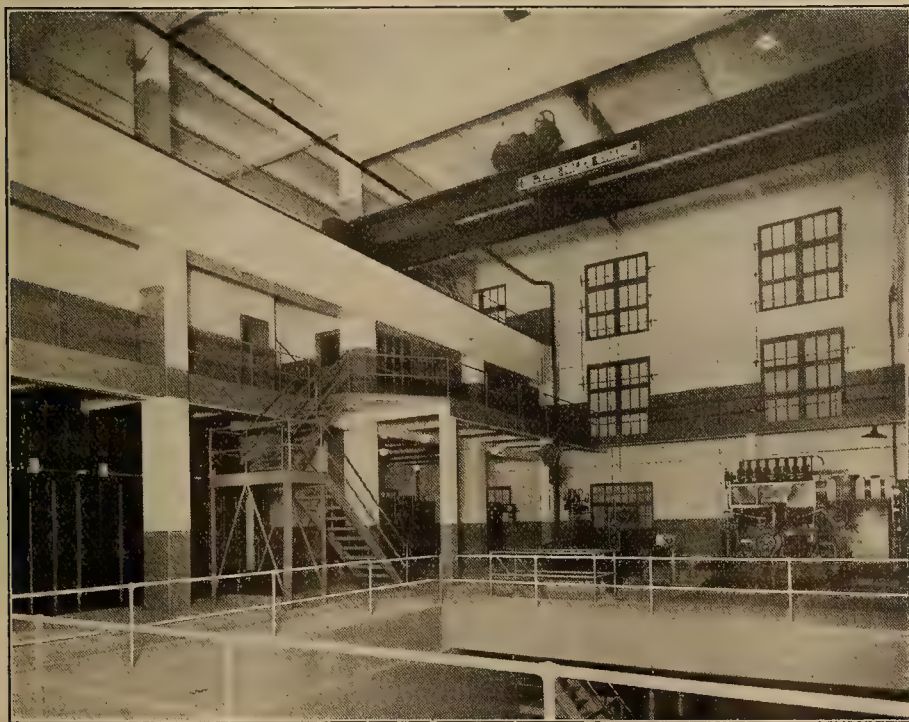
Claiming that cooperation should be the slogan for the settlement of the Colorado River problem, Dwight B. Heard, prominent business man of Phoenix, Ariz., with a long record of public service, has received the Republican nomination in the gubernatorial race in that state as an opponent to Governor George W. P. Hunt, Democrat, incumbent who has been renominated. Mr. Heard's platform, in opposition to that of Governor Hunt, calls for the securing of endorsement of the Colorado River Compact by Arizona legislation and the placing in effect of this document when definite agreement between the states of the lower basin and approval by the Federal Congress shall have been secured.

Mr. Heard has pledged his support to bring about, with the least possible delay, development of the Colorado River for the benefit of the people of Arizona. In his opinion such a plan should include first a vigorous effort to secure from the federal government a direct appropriation for flood control at such a site on the Colorado River as federal engineers might approve. Second, Mr. Heard holds that there should be an effort to secure endorsement of the Colorado River Compact by Arizona and in formulating such an agreement reservations should be made for such proportion of the available water of the Colorado River as would insure irrigation and development of all lands in Arizona which could be reclaimed at reasonable cost now or in the future. In this connection he desires to provide for the payment into the treasury of the State of Arizona of the proceeds of a production tax on hydroelectric power, generated at sites wholly or partly within Arizona by public or private agencies, and delivered and used outside the state. Thirdly, Mr. Heard proposes to secure the execution of an arrangement which shall fully protect Arizona's rights to the use of Colorado River water against any future appropriation of this water for lands in Mexico. The fourth proposal of the Republican candidate is that legislation be passed which would give Arizona the right to tax hydroelectric works developed on the Colorado River by private interests on federal as well as privately owned lands.

Mr. Heard recently gained attention through his plan for a cooperative construction project on the Colorado in which all interests would unite with rates and methods of service under public control.

Observers in Arizona report that while the state is strongly democratic Mr. Heard has a fair chance of election since the people are tired of Governor Hunt's continuous rule.

California Site Applied for by Ventura Power Company.—An application for a preliminary permit has been filed with the Federal Power Commission by the Ventura Power Company of Wilmington, Del. The application covers a proposed project in Piru Creek, a tributary of the Santa Clara River in California. It is proposed to erect two dams, one 210 ft. and the other 200 ft. in height, so as to create reservoirs of 53,000 acre-ft. and 22,000 acre-ft. respectively.



Interior of Young's Bay plant, Pacific Power & Light Company, in which a new 5,000-kw. steam unit is to be installed. The unit will be located in the pit in the foreground.

Two New Maps of Oregon Issued by Geological Survey

Continuing its plan of furnishing as much geographical information as possible to the general public, the United States Geological Survey has issued two maps of the State of Oregon, on the scale of eight miles to the inch. One of these maps shows the location of all precise and primary level lines in the state, including those run by the Geological Survey, the Coast and Geodetic Survey and the Reclamation Service, with reference numbers indicating where detailed information concerning the elevations may be secured. The other map gives the location of all triangulation points located in the state, as well as the location of all the primary transverse lines that have been completed in Oregon. This map also gives, by suitable indication, the publication in which the exact latitude and longitude of all the points in question may be secured.

The maps are intended primarily for engineers, particularly those having occasion to use government bench marks. It is understood that the maps are not for sale, but persons engaged in engineering practice, who have sufficient use for them, may be able to secure copies by applying direct to the United States Geological Survey, Washington, D. C.

Changes in Personnel Announced by Edison Company

Changes in the organization of the commercial and sales departments, effective as of Sept. 9, have been announced by the Southern California Edison Company, Los Angeles, Calif.

W. L. Frost, formerly manager consumers department, has been appointed



W. L. FROST

general commercial manager. He will have supervision of all district offices and their employees, and all matters pertaining to promotions and transfers, advertising, complaints regarding service, maintenance of properties, subscriptions and donations, general instructions and information will be referred to him. Mr. Frost has been in the service of the Edison company twenty-four years, having progressed from meter reader to groundman, lineman, bookkeeper, collector, chief clerk, power salesman, assistant district manager, district superintendent's assistant, purchasing agent, district manager and assistant to the vice-president.

A. W. Childs, who has held the title of manager commercial department, has been made general sales manager. Un-

der his jurisdiction will come all matters pertaining to the selling of electricity and current-consuming appliances and devices. This includes selling plans, the general direction of salesmen and all questions pertaining to business development. He will also have general supervision of credits and collections and employees connected with that work and will approve all applications for extensions. Mr. Childs



A. W. CHILDS

entered the employ of the old Edison Electric Company, and has served in the capacities of district manager, assistant general agent, and superintendent of sales. He has also been chairman of the advisory committee of the California Electrical Cooperative Campaign and chairman of the commercial section of the Pacific Coast Electrical Association.

W. C. McWhinney has been named general business agent and will have assigned to him special work in connection with the study and inspection of certain conditions in district offices, with the idea of stimulating economy and bringing about more efficient operation. Mr. McWhinney was formerly in the employ of the Pacific Light & Power Company where he was engaged on work in connection with the development of the early units of the Big Creek project. He was later transferred to the sales department and was assistant sales manager at the time of the merger of the Pacific Light & Power Company with the Edison company. During his service with the latter com-



W. C. McWHINNEY

pany he has filled the positions of district manager, assistant superintendent of sales and commercial statistician.

The titles of "manager consumers department," "manager commercial department" and "commercial statistician" have been abolished.

Bids on Construction of Cushman Project Are Received

Low bid on the construction of the power house for the Lake Cushman project of the City of Tacoma, Wash., was submitted by A. Guthrie & Company, Portland, Ore., the amount being \$195,190. Other bids submitted were by Walesby Construction Company, Tacoma, \$195,930, and J. B. Murphy, Seattle, \$198,757. The building will be 74 x 133 ft., of reinforced concrete, with hollow tile partitions and tubular steel doors and sash. Award or rejection of the bids will be made in the near future by Ira S. Davison, commissioner of light and water.

All bids submitted for the construction of the Narrows transmission span were rejected with the exception of that of Ward & Ward, Tacoma, at \$33,000 for the concrete footings and anchors for the towers. This span is to be 6,240 ft. long, and will carry the power from the Lake Cushman plant across the Narrows of Puget Sound. It was estimated to cost \$250,000 and the best combination total that could be figured from the bids submitted was \$260,000. Commissioner Davison believes that a saving to the city can be effected by a call for new bids.

Report Attack Is to Be Made on Federal Power Commission

Reports from Washington, D. C., state that an attack on the Federal Power Commission is to be made by public ownership advocates. A dispatch from one correspondent reads as follows:

An attack on the Federal Power Commission is about to be launched by the advocates of public ownership of utilities. The movement has its principal support in California, where it is contended that the Commission is entirely hostile to public ownership and has nullified the priorities granted in the Act to municipalities.

It is contended further that the attitude of the Federal Power Commission, revealed at the hearings on the Swing-Johnson bill, is that the whole conception of the Boulder Canyon dam, on the Colorado River, is an experiment in public ownership. From what is known of the attitude of the Commission it is thought the foregoing assumption is correct. It is known that the Commission has learned that it is the ambition of certain individuals to build up in California a hydro commission like that in Ontario. If California thinks it can find a Sir Adam Beck and is willing to undertake a development on the Colorado which will fit into a general plan for the utilization of the full resources of the stream, and would be willing to finance its experiments itself, it is regarded as entirely probable that the Federal Power Commission would be willing to grant the necessary license and assist in every way to make the development a success. It is very evident, however, that the financing out of the federal treasury of developments within states conflicts with the policy of the Commission. It also is very evident that the Commission believes that private development of power is more likely to be successful than are municipal or state schemes, due to the fact that extensions, rates and policies would be subject to political control which frequently deviates from the path which would be chosen by private enterprise. It is believed the three secretaries making up the Commission would hold similar views with regard to any excursion of the public into business. There is every reason to think, however, that they would be perfectly willing to aid any municipal or state project were the public agency to be ready to finance its own project.

Colorado Dam Sites Being Surveyed.

—Two dam sites above Pierce's Ferry, on the Colorado River, and several others between Pierce's Ferry and the El Dorado dam site at the lower end of Black Canyon are to be examined and surveyed by a party of eight men headed by E. C. LaRue. The party left Kingman, Ariz., Sept. 10.

Chambers of Commerce Condemn Water and Power Act

The boards of directors of the Chambers of Commerce of Los Angeles, Santa Paula, Fullerton and of Ventura County have recently passed resolutions condemning the proposed California Water and Power Act that will come before the voters of that state Nov. 4. The resolutions adopted by the boards are approximately the same, the one adopted by the Los Angeles Chamber Commerce being typical. It reads as follows:

Resolution

Whereas, the Los Angeles Chamber of Commerce, through its various expert committees has for some time past been giving a most careful study of this measure, and

Whereas, these expert committees have reported to the Board of Directors their findings in the matter, which findings have received the unanimous approval of the Board of Directors, to wit:

That the Los Angeles Chamber of Commerce Board of Directors is opposed to the enactment of the Water and Power Act as inimical to the best interest of the state;

As tending to destroy private initiative;

As vesting practically unlimited powers in the Water and Power Board with no adequate safeguards and checks;

As tending to create a political machine of tremendous magnitude;

As creating a staggering indebtedness, the deficits on interest of which are payable from the general fund;

As permitting the officials of municipalities in collaboration with the Water and Power Board to thwart the will of the people of such municipalities where by vote they may have refused to approve bond issues for the extension of municipal power development.

Therefore, Be It Resolved, that this resolution be adopted as expressing the opinion of the Board of Directors of the Los Angeles Chamber of Commerce.

LOS ANGELES CHAMBER OF COMMERCE.

Rate Reductions Are Announced for Washington Towns

New tariffs affecting certain schedules of rates in Chehalis and Kelso, Wash., have been published by the Puget Sound Power & Light Company, Seattle, Wash. At Chehalis the new schedule in domestic and commercial lighting will make no change in the rates for those customers using 40 kw-hr. or less per month, and will make a slight increase in the rate for consumption between 41 and 99 kw-hr.; but will make a marked reduction in the price of all current consumed in excess of 100 kw-hr. per month. At Kelso the new tariff makes an average reduction of about 10 to 12 per cent in residential and commercial lighting and cooking.

The Longview Public Service Company, Longview, Wash., has put into effect a reduction in the residential and commercial lighting and cooking schedules for Longview approximately equivalent to those under which Kelso is served.

Electrical Sales Possibilities Analyzed by Government

The East North Central section of the United States comprising Ohio, Indiana, Illinois, Michigan and Wisconsin leads as a potential market for electrical merchandising lines, according to an engineering analysis of the relative sales possibilities of different areas recently released by the Department of Commerce.

Based upon definite statistical data, modified as specifically as possible according to varying conditions in different sections of the country, the study shows that New York ranks first with

a ratio of a potential 11 per cent, of the total electrical merchandising business of the country, followed by Pennsylvania with 8.5 per cent; Illinois, with 7.3 per cent; California, with 6.3 per cent; and Ohio, with 6.2 per cent.

In each case the percentage shown is that portion of the country's 100 per cent electrical merchandising business that should normally be expected from each of the different states.

It is pointed out that the desire to use modern home comforts, or what is termed "inclination to purchase" electrical goods for household or individual use, varies considerably in different states and is generally lowest in the east and southeast while it increases gradually from there to the Pacific coast.

The final results of the survey—an average of the analysis of factors affecting purchasing power and distribution for the West are summarized by the Department of Commerce as follows:


Mountain	3.5258
Montana .....	.7607
Idaho .....	.5213
Wyoming .....	.1999
Colorado .....	.9199

Utah .....	.4665
Nevada .....	.1663
New Mexico .....	.2175
Arizona .....	.2737
Pacific	9.0450
Washington	1.8549
Oregon .....	.8896
California	6.3005

This analysis, undertaken jointly by the electrical and domestic commerce divisions of the Department of Commerce, is intended as a guide whereby manufacturers may determine the possibilities for market expansion in a given territory, and how much sales effort a territory might justify. It is believed that the information contained in this booklet, "Domestic Market Possibilities for Electrical Merchandising Lines" will be of interest and value to anyone concerned in the marketing of electrical household appliances. The price is five cents.

Radio Conference to Be Held Oct. 6.—The third National Radio Conference will be held in Washington, D. C., Oct. 6 instead of Sept. 30 as originally announced. The meeting will be opened by a statement by Secretary of Commerce, Herbert Hoover.

Let's win this \$15,000 home



Home to be given FREE!

Win a \$15,000 home by winning a contest. The prize is a beautiful home with all the modern conveniences. The contest is open to all boys and girls over 10 years of age who attend grammar or high school. You can secure this primer by registering for the contest at the store of

Shearer ELECTRIC CO.
209 North Virginia Street—Phone 567

Full Information Regarding This Contest

Prizes
Entrance Blanks,
Etc.
Furnished on Request

Nevada Machinery & Electric Company
121 North Virginia St.
Phone 202

Home Lighting Contest Now On

school Boys! school Girls!

Enter the Home Lighting Contest at Once

Call at our store on Sierra street and have all details explained or send us your registration card.

Gill Electric Co.
214 Sierra Street
Phone 1883 W




Get a Lighting Primer FREE!

In order to enter the contest you must first get the Home Lighting Primer. The Primer will explain all details of the contest, which is open to any boy or girl over ten years of age who attends grammar or high school. You can secure this primer by registering for the contest at the store of

MARTINEZ ELECTRIC COMPANY
19 East Second Street—Phone 670-W

Home Lighting Contest Begins today



School Boys! School Girls! Get This Primer Free!

This is the day to enter the home lighting contest. Here is the way to do it!

1. Get a registration card at our office or at any electrical store.
2. Fill out card and return to electrical dealer or Power Co. office.

Boys and Girls, here is a chance that comes only once in a lifetime. Each boy or girl over ten years of age who is attending public, private or high school has an opportunity to win a prize. Don't forget to enter this contest today!

Try for ten cash prizes for this district—one to be given in addition to the national prizes. These prizes run from \$5.00 up to \$500. Call today at the office of the

Truckee River Power Company
and have all the details explained.

Full-page newspaper advertisement, calling attention to the opening of the Home Lighting Contest that was presented to the public of Reno, Nev., by the electrical industry of that city.

World Power Meeting Described for San Francisco Men

General characteristics and the high spots of the World Power Conference held in London, England, were related to the San Francisco section of the A.I.E.E. at its first meeting of the season on Sept. 26, by C. E. Skinner, assistant director of engineering, Westinghouse Electric & Manufacturing Company. Mr. Skinner, in his interesting review of the conference, touched upon the salient statements in the papers presented and called attention to the fact that the power surveys presented were of particular importance. The potential power resources of several countries were given considerable attention.

Of interest to hydroelectric engineers was Mr. Skinner's comment concerning studies as to the relation of wet and dry seasons. In this connection he stated, "Recent announcements would indicate that a study of the variation in the sun's heat may in the future form a very important part of our estimation of potential water powers. If the measurement of the sun's heat will permit us to predict in general, weather of the world two years in advance as has been suggested, then we can prepare for drouths and excess precipitation instead of being taken unawares as at present."

Palace of Electricity to Be Shown at Exposition

The Palace of Electricity shown at the California Industries Exposition last year, proved so popular both from the point of view of the consumer and the trade, that it has been decided to repeat the feature at the exposition which will be held this year from Oct. 18 to Nov. 1.

A special committee of the San Francisco Electrical Development League, under the direction of Clyde L. Chamblin, has been organized and arrangements are practically completed. More than half of the space allotted to the electrical exhibit has been sold, as was shown at a luncheon meeting given on Sept. 17 at the Palace Hotel by the exposition authorities to members of the electrical industry of San Francisco. Specially designed booths will be furnished this year and the illumination will be of unusual character.

It is anticipated that the electrical exhibit this year will far surpass that of previous years and that the attendance at the Palace of Electricity will break even the record of last year.

Sub-Committee Heads in Technical Section Appointed.—H. H. Schoolfield, Pacific Power & Light Company, Portland, Ore., chairman of the Technical Section of the Northwest Electric Light & Power Association, has announced the following appointments as chairmen of the sub-committees of that section: accident prevention, J. B. Fisk, Washington Water Power Company, Spokane, Wash.; hydraulic power, R. L. Hearn, Washington Water Power Company; inductive co-ordination, George E. Quinn, Puget Sound Power & Light Company, Seattle; meters, R. E. Thatcher, Puget Sound Power & Light Company; electrical apparatus, R. R. Robley, Portland Electric Power Company, Portland; underground systems, R. S. Carroll, Portland Electric Power Company; prime movers, O. L. LeFever, North-

western Electric Company, Portland; overhead systems, Z. E. Merrill, Mountain States Power Company, Albany; cooperation with regulatory bodies, H. J. Flagg, Grays Harbor Railway & Light Company, Aberdeen. The above, with the addition of F. J. Rankin, Idaho Power Company, Boise, Idaho, constitute the executive committee of the Technical Section.

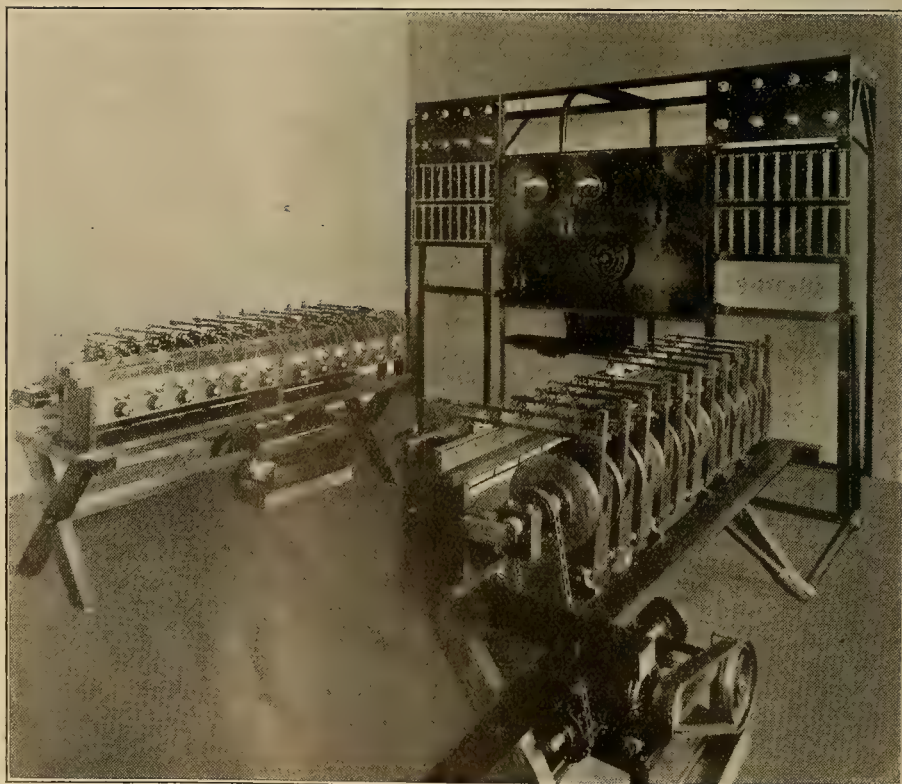
Applications for Permits to Appropriate Water Filed with the California Division of Water Rights.—J. M. O'Brien, San Francisco, Calif., has applied for permission to appropriate 125 sec.-ft. from South Fork North Yuba River to be diverted for power development purposes estimated to cost \$50,000. Bear River Water & Power Company, Auburn, has filed application to divert for generation of 42,994 hp., 250 sec.-ft. and 100,000 acre-ft. storage from Bear River tributary to Feather River. Permit to divert 500 sec.-ft. and 400,000 acre-ft. per annum storage from Cosumnes River tributary to Mokelumne River for generation of 40,000 theoretical horsepower has been applied for by Stephen E. Kieffer, San Francisco.

Extension of Wynooche River Permit Requested.—An extension of his water rights on the Wynooche River, Grays Harbor County, Wash., has been requested by J. E. Malinowski of Aberdeen, from Oct. 25, 1924, to Oct. 25, 1925, in order to allow the City of Aberdeen, to which he has tentatively assigned his rights, to proceed with construction work. The extension is necessary, Mr. Malinowski points out, because the courts have declared void an election which provided for a bond issue allowing the city to begin construction work.

Applications Filed for Water Appropriation in Oregon.—The California Oregon Power Company of Medford, Ore., has applied for permit to appropriate water from Clearwater River and Mowich Creek for the development of 14,205 hp. in Jackson County, according to announcement issued by Rhea Luper, state engineer. The Oregon-California Hydroelectric Company of Portland, has filed application covering the construction of Salmon River reservoirs and other reservoirs for storage of 200,000 acre-ft. of water from Salmon River for power development and municipal purposes in Clackamas County. The engineer's office also reports that Malcolm A. Moody of The Dalles, has applied for permission to appropriate water from Deschutes River for power development in Wasco County.

Display Men See Electrical Window Exhibit.—The Northwest Display Men's Association held a convention in Spokane, Wash., Sept. 22-24. A special meeting on Sept. 23 was devoted to store and window lighting, the feature of which was an address by Clarke Baker, National Lamp Works of the General Electric Company, Oakland, Calif., in which Mr. Baker used for the first time special equipment, including a portable show window and stage 12 ft. long, 12 ft. wide and 6 ft. deep. This meeting was attended by 200 persons, including the display men and a number of the Spokane electrical dealers and contractors.

Electric Cooking School to Be Held in Oregon.—An electric cooking school is to be held in Corvallis, Ore., Sept. 29-Oct. 3. Miss Carroll Dangler, home economist of the Edison Electric Appliance Company, Inc., will be in charge.



Machine designed and used by Harvey Hubbell, Inc., Bridgeport, Conn., for testing key sockets and switches. A counter at end of machine shows number of operations and should trouble develop it is indicated by one of the lamps on the switchboard. This is said to be the first machine to successfully test toggle switches.

Large Attendance Expected at Pasadena Convention

Prominent Eastern Engineers and Pioneers of Industry Are to Be Present at Pacific Coast Meeting of A.I.E.E.

Elaborate plans for the entertainment of the delegates to the Pacific Coast Convention of the American Institute of Electrical Engineers to be held at Pasadena, Calif., Oct. 13-18, and an exceptionally good program, insure a most successful meeting. The complete program for the convention appeared on page 224 of the Sept. 15 issue of *Journal of Electricity*. Convention headquarters will be at the Hotel Maryland.

A special party from the East, including many prominent engineers and pioneers in the electrical engineering profession, are on their way to the Coast to attend the meetings. Stops will be made at points of interest along the route, the party arriving in San Francisco Oct. 2. There they will be the guests of the San Francisco section of the A.I.E.E. Trips will be made to the Vaca-Dixon substation of the Pacific Gas and Electric Company and to Stanford University. The party will make an inspection trip to the Hetch Hetchy project of the City of San Francisco, following which two days will be spent in Yosemite National Park.

Technical sessions of the convention will begin Monday morning, Oct. 13, with an address of welcome by H. M. Wadsworth, chairman of the board of directors of the City of Pasadena, with the response by President Osgood of the Institute. Business meetings will continue until Friday noon. A session of special and scientific interest will be that on Wednesday afternoon held at the California Institute of Technology, with papers by members of the Norman Bridge Laboratory of Physics and of the faculty of the Institute. During that afternoon and evening the California Institute of Technology will keep open house and a number of interesting tests and experiments have been arranged for the guests in the physics laboratory and the new million-volt laboratory.

The program for the Pacific Coast Convention should prove of special interest this year in that there will be one whole session devoted to papers dealing with the industrial application of electricity in addition to the usual

sessions for the presentation of papers of a purely technical nature.

Entertainment

Two attractive features have been arranged for the entertainment of the delegates and guests. On Tuesday evening all guests will be conveyed by automobile to one of the beach resorts, where a stop will be made and brief addresses will be given by men prominent in the electrical industry. This trip will be replete with interesting sights and features. A trip is scheduled to Mt. Wilson, leaving in the late afternoon Thursday, where guests will have an opportunity to see the apparatus of the Carnegie Institute in action. The trip includes accommodations at the hotel on Mt. Wilson. Friday afternoon will be given over to the golf and tennis tournaments. On the evening of this same day the Edison banquet will be held with a feature program by eminent electrical pioneers. The banquet will be open to the citizens of Pasadena in commemoration of Jubilee Year.

The convention will officially close Friday night but on Saturday a number of special trips will be arranged to suit the varied tastes of visitors and guests.

Department of Public Works to Investigate Rates

Looking toward a readjustment of rates charged by the Pacific Power & Light Company, Portland, Ore., in eastern Washington towns, the Department of Public Works, Olympia, Wash., has entered a complaint against the utility company. The complaint, which was the outgrowth of a formal complaint received from the City of Walla Walla, is made to affect all the communities served from the company's Yakima-Walla Walla power system, and includes, besides Walla Walla, such cities and towns as Dayton, Pasco, Kennewick, Prosser, Sunnyside, Toppenish and Yakima.

The department intends to investigate the properties of the company and the rates charged by it in these districts,

and to this end has appointed, to carry on the investigation, J. D. Ross, superintendent of lighting department, Seattle, and F. R. Nichols, engineer that had charge of the electrification of the Chicago, Milwaukee & St. Paul Railroad, to work with its own chief engineer, James W. Carey. On completion of this investigation the department will call a public hearing at which all the interested parties may be heard.

Books and Bulletins

SUPERPOWER AS AN AID TO PROGRESS

By GUY E. TRIPP. G. P. Putnam's Sons, New York.

General Tripp, who is chairman of the board of directors, Westinghouse Electric & Manufacturing Company, was one of the first to recognize the possibilities of so-called "superpower." Through his active cooperation, Frank G. Baum of San Francisco was enabled to produce his monumental work, "An Atlas of the U. S. A. Electric Power Industry," that formed the major topic of discussion at the 1923 convention of the National Electric Light Association.

While Mr. Baum's work concerned itself largely with the technical phases of superpower, General Tripp's book is more popular in its character, and deals with the subject in terms of its influence upon civilization, the welfare and industrial development of the people. The general subject is covered in six chapters, including: The Electrification of North America, Private Ownership vs. Government Ownership of Superpower Systems, What America's Water Power Will Do For American People, Water Power and Statesmanship, States Must Not Isolate Their Water Power, Superpower as an Aid to National Defense.

In general, this work represents the thoughtful conclusions of a man whose life and experience have given him a profound grasp of industrial development and the progress of civilization. Everyone in the electrical industry may well read and study General Tripp's conclusions.



Hotel Maryland, Pasadena, where the Pacific Coast Convention of the American Institute of Electrical Engineers will be held, Oct. 13-18.

Meetings

Confederation of Leagues Plan Adopted at Meeting

The adoption of a plan for the organization of a national league of local electrical clubs and leagues was one of the principal things accomplished at Camp Cooperation IV, the third conference of local electrical leagues held at Association Island, N. Y. The business sessions of the conference were held Sept. 2-6 and were attended by 215 persons representing fifty-one local leagues.

The plan adopted by the representatives of the various leagues calls for the formation of a national League Council which shall establish organized cooperation between individual local leagues without setting up another national association with national offices. To eliminate the formation of such an association for this purpose the plan proposes the establishing of a working arrangement with the Society for Electrical Development whereby that organization will be used as a national clearing house for league activities and to provide a national service to local leagues.

Management of the confederation of leagues, according to the plan, is to be vested in a League Council elected by the leagues at the annual conference.

COMING EVENTS

Association of Electragists, International—
Annual Convention—West Baden Springs, Ind.
Sept. 29-Oct. 4, 1924

American Institute of Electrical Engineers—
Pacific Coast Convention—Pasadena, Calif.
Oct. 13-18, 1924

Illuminating Engineering Society—
Annual Convention—Briarcliff Lodge,
Briarcliff Manor, N. Y.
Oct. 27-31, 1924

Commercial National Section, National Electric Light Association—
Hotel Rafael, San Rafael, Calif.
Nov. 19-21, 1924

Twelve representatives, one from each geographic section of the United States in accordance with the map used by the National Electric Light Association and one from Canada and members from such important leagues as it seems advisable to have represented, will make up the League Council. The Society for Electrical Development is to provide national headquarters for the confederation and in general provide the working organization for the League Council. The entire plan including the articles of confederation have been published and copies sent to the various electrical organizations throughout the United States. The plan was drawn up by a committee that was appointed at Camp Cooperation III and was headed by Earl E. Whitehorne, commercial editor, Electrical World.

Following the presentation and acceptance of the plan representatives to the League Council were nominated and

elected. The men elected to represent the West on the Council are:

Rocky Mountain States.—Harry D. Randall, General Electric Company, Denver, chairman Electrical Cooperative League.

Northwestern States.—Harry J. Martin, National Carbon Company, Seattle, president Electric Club of Seattle; R. M. Blake, Utah Power & Light Company, Salt Lake City, secretary-treasurer Rocky Mountain Electrical Cooperative League.

Pacific Coast States.—C. T. Hutchinson, Journal of Electricity, San Francisco, San Francisco Electrical Development League; K. E. Van Kuran, Westinghouse Electric & Manufacturing Company, Los Angeles, Electric Club of Los Angeles.

Canada.—J. Lightbody, British Columbia Electric Railway Company, Vancouver, honorary secretary Electrical Service League of British Columbia.

In addition to discussing the above plan the delegates at Camp Cooperation also spent considerable time in discussing the Red Seal plan for promoting adequate wiring that is being conducted under the direction of the Society for Electrical Development. Attention of the conferees was also focussed upon the activities of the Lighting Educational Committee.

Apparatus Bureau Makes Plans for Coming Year Study

Discussion of the program for the coming year was held during the first meeting of the Apparatus Bureau of the Technical Section, P.C.E.A., held in Los Angeles, Sept. 18. Fifty members of the bureau were in attendance and sessions were held in the morning and afternoon.

It is the plan of the bureau to study oil circuit breakers; oil that will be suitable for all oil-immersed apparatus; transformer cooling and design; power interchange; relays and relay application; and automatic generating plants and automatic substations. The Apparatus Bureau plans to assist the Hydraulic Power Bureau in the compilation of a joint report on existing hydro-electric stations and will also assist the Prime Movers Bureau in preparing a joint report on existing steam plants. Station electrical grounds, power factor correction, lightning arresters, and fire fighting equipment will also receive attention from the bureau.

Spokane Electric Club Elects Officers.—The Spokane Electric Service League held a special dinner meeting at the Davenport Hotel on Sept. 15, at which the annual election of officers was held. Lewis A. Lewis, sales manager of The Washington Water Power Company, was chosen president. Plans were made for the coming year and it was decided to organize a special campaign to promote better home lighting. The meeting was enlivened by a brief but well chosen vaudeville program.

Extensive Electric Exhibit to be Displayed at Fair.—The annual Western Washington Fair, held at Puyallup, Wash., Sept. 29 to Oct. 5, will display a new electric building under construction in which an electric exhibit will demonstrate the possible uses of electricity for every farm purpose, from milking a cow to running the washing machine. Electrically equipped farms, homes and business houses will be worked out in models. Sharing space with the electrical display in the new building, will be an art exhibit electrically lighted, so as to give the finest possible display.

Discuss Home Lighting Contest at Los Angeles Meeting

A meeting of the Los Angeles Committee for the Home Lighting Contest was held Sept. 12, in the auditorium of the Southern California Edison Company, with A. W. Childs, manager of the commercial department, Southern California Edison Company, as chairman. About one hundred and twenty-five representative men of the electrical industry were present.

Victor W. Hartley, executive secretary of the California Electrical Cooperative Campaign, outlined the scope

COMING PACIFIC COAST ELECTRICAL ASSOCIATION MEETINGS

Appliance Bureau, Southern Group—Commercial Section—

Los Angeles, Calif.
Oct. 3, 1924

Executive Committee, Commercial Section—

Los Angeles, Calif.
Oct. 17-18, 1924

Power Bureau—Technical Section—

Los Angeles, Calif.
Oct. 17-18, 1924

Appliance Bureau—Commercial Section—

Los Angeles, Calif.
Oct. 17-18, 1924

Transportation Bureau—Commercial Section—

Los Angeles, Calif.
Oct. 17-18, 1924

Executive Committee, Commercial Section—

San Francisco, Calif.
Nov. 19-21, 1924

Purchasing and Stores Section—

Del Monte, Calif.
Nov. 20-21, 1924

Power Bureau—Technical Section—

San Francisco, Calif.
Nov. 20-21, 1924

and plan of the Home Lighting Contest in detail, after which a discussion of the campaign was entered into and brief talks were made by the following: J. H. Jamison, manager, merchandising division, Westinghouse Electric & Manufacturing Company; H. C. Rice, assistant sales manager, appliance division, Southern California Edison Company; Prof. A. R. Clifton, superintendent of the Monrovia Public Schools; David C. Pence, manager lamp department, Illinois Electric Company; F. E. Seaver, assistant secretary of the Los Angeles Gas & Electric Corporation and president of the Los Angeles Electric Club, and Paul J. Denninger, Whittier district manager, Southern California Edison Company.

Southern California Appliance Bureau Members Hold Meeting.—To organize and to prepare plans for the ensuing year nine southern California members of the Appliance Bureau, Commercial Section, P.C.E.A., met in Los Angeles Sept. 19. The men in attendance determined that one of the principal activities of the bureau would be the recommending of definite selling plans for the various appliances. At the next meeting of the southern California members of the bureau, to be held in Los Angeles Oct. 3, subjects to be covered by the various sub-committees will be outlined. This meeting will be preliminary to a general meeting of the entire Appliance Bureau, to be held in Los Angeles Oct. 17-18, in conjunction with the Commercial Section Meeting.

Manufacturer, Dealer and Jobber Activities

The Bryant Electric Company, of Bridgeport, Conn., has recently added to its line of electrical wiring devices a new line of shallow push button switches. These switches are known as the "5500 Line" and are made in single pole, double pole, three point and four point styles. The company has also placed on the market a lock type tumbler switch that is similar to the Bryant shallow cup flush tumbler switch except that the composition handle has been removed and replaced by a fibre shield slotted to receive the actuating key. To adapt its types of standard cut-out bases and fused switches for use with single fused circuits, the company has removed the fuse holding means from one side of all double-pole main line and branch circuit cut-out bases and has bridged the gap with a permanent metal shunt, thus leaving provisions for the use of only one fuse in each circuit. This is done to comply with the 1923 National Electrical Code recommendations providing for fuses only on the ungrounded side of all branch circuits. On the triple pole devices the middle or neutral fuse receptacles have been omitted and the gap bridged by shunts.

Crouse-Hinds Company, Syracuse, N. Y., has published folder No. 13, which is devoted to the line of connectors manufactured by the company. Bulletin No. 2058 presenting a description of Wedgtite pipe hangers manufactured by the company has also been published.

The Esterline-Angus Company, Indianapolis, Ind., has published Bulletin No. 624 which deals with the operation of its multiple chart speed meters. Wiring diagrams showing the installation of the meters are also presented.

The Blue Bird Electric Shoppe, under the proprietorship of H. C. Shireman and George W. Paulsen, was opened Sept. 1, at 287½ Washington Street, Portland, Ore. The new store specializes in retail sales of the Blue Bird washer, Utenco ironer, and other large appliances.

Ward-Leonard Electric Company, Mt. Vernon, N. Y., has published Bulletin 59. This bulletin is devoted to a description of the company's manual type direct current motor starters and controllers. A complete listing of this type of equipment is contained in the bulletin together with list prices on the devices.

The William Cramp & Sons Ship & Engine Building Company, Philadelphia, Pa., and The Pelton Water Wheel Company, San Francisco and New York, have announced the opening of a southern office in Birmingham, Ala. Quin W. Stuart has been appointed district engineer with offices in Birmingham.

Detroit Electric Furnace Company, Detroit, Mich., has prepared for distribution a well illustrated booklet relative to that company's line of electric brass melting furnaces. Illustrations showing installations of the company's furnaces in industrial plants show the adaptability of the electric furnaces to various usages.

The R. Thomas & Sons Company, East Liverpool, Ohio, has published leaflet PD-147 which is devoted to the company's line of insulators designed for use by railroad and telephone companies.

National Tube Company, Pittsburgh, Pa., has recently issued National Bulletin No. 10 which is devoted to the use of "National" pipe in power plants. The bulletin shows pictorially a wide range of uses for National pipe in central station work, both in ordinary runs and in special cases. Standard specifications for the company's line of pipe are also included in the text matter.

Illinois Stoker Company, Alton, Ill., has recently published the third edition of Catalog L which is devoted to the Illinois line of chair grate stokers. The catalog contains a complete discussion on both the Type A (natural draft) and Type G (forced draft) stokers. A noteworthy feature of the catalog is the array of blueprint drawings which appear on pages 32 to 61, inclusive, and illustrate the use of both forced and natural draft Illinois chain grate stokers in connection with all of the principal types and makes of boilers. The catalog is designed principally for power plant operators' use and will be sent free upon request.

The A B Products Division of the National Screw & Manufacturing Company, Cleveland, Ohio, has prepared two supplementary catalog sheets, one devoted to "Glass-Steel" ABolite combinations and parts and the other to ABolite reflector-shade-holder combination units for pendants. Myers & Schwartz, with offices in San Francisco, Seattle, and Los Angeles, are Pacific Coast distributors for the manufacturer.

Steel City Electric Company, Pittsburgh, Pa., has issued a sheet presenting distributors' net prices on Universal couplings.

Worthington Pump & Machinery Corporation of New York, N. Y., has recently announced the design of an entirely new type two-cycle double acting Diesel engine. The company claims that the new engine combines a fuel economy comparable with that of the best existing type of Diesel engine, with dimensions, weight and construction cost per horsepower approaching those of reciprocating steam machinery. It is also claimed that indications are that a greater horsepower per cylinder can be obtained from the new engine than has been from any Diesel engine yet designed. The new Worthington engine is of American design and construction and owes nothing to European patents or ideas.

C. F. Braun & Co., Alhambra, Calif., has published Bulletin 114 which is devoted to a description of Braun cooling towers. The bulletin contains complete description of the company's line of cooling towers and presents illustrations showing many installations of the equipment.

The California Wire & Cable Company, formerly the California Wire Company, has been appointed sole distributor for the copper wire products of the Columbia Steel Corporation, Pittsburg, Calif.

The Ne Page-McKenny Company, Armour Building, Seattle, Wash., has received the contract for the electrical wiring in the Medical and Dental Building under construction at Fifth and Westlake Avenues. The structure will cost \$2,500,000.



The above four promenaders, caught by the photographer on the Boardwalk at Atlantic City during the recent N.E.L.A. convention, are well known in the electrical industry in the Northwest, three of them having been at one time officials of the Pacific Power & Light Company, Portland, Ore., while the fourth for many years has represented the manufacturers of Thor products in Oregon, Washington and Idaho. Reading from left to right they are: R. G. Chamberlain, district manager for the Hurley Machine Company, Seattle, Wash.; C. S. Walters, vice-president and general manager of the Asheville Power & Light Company, Asheville, N. C.; P. F. Gow, treasurer of the Kansas Gas & Electric Company, Wichita, Kan., and J. V. Strange, operating manager of the Carolina Power & Light Company, Raleigh, N. C.

Personals

Donald C. Barnes, since 1919 manager of the central division of the Puget Sound Power & Light Company,



DONALD C. BARNES

Seattle, Wash., was promoted Sept. 1 to be a vice-president of that company with headquarters in Boston. Previous to his appointment as Seattle manager Mr. Barnes had been manager of the Everett (Wash.) division of the company where he also managed the Puget Sound International Railway & Power Company, the Pacific Northwest Traction Company, and the Seattle-Everett Interurban Line in charge of railway, light and power operation. He is well known in utility circles, having been associated with Stone & Webster companies since 1905. Mr. Barnes was born in Cambridge, Mass., in 1880 and graduated from Harvard University in 1902 with the degree of A.B., receiving two years later the degree of B.S. in electrical engineering. Following his graduation he served with the Boston Elevated Railway, the Little Rock Railway & Electric Company (now the Arkansas Central Power Company), the Birmingham Railway, Light & Power Company, the Electric Light & Power Company of Abington and Rockland, Mass., the Edison Electric Illuminating Company, Brockton, Mass., and the Blackstone Valley Gas & Electric Company of Pawtucket, R. I. Mr. Barnes is an associate member of the American Institute of Electrical Engineers and belongs to the leading clubs of Seattle and Everett.

Dave McCulloch, of the Electric Service Company, Sacramento, Calif., recently made an eight-day business trip through Nevada by automobile.

R. G. Chamberlain, district manager of the Hurley Machine Company, Seattle, Wash., visited Spokane, Sept. 21 and 22, in connection with general sales matters.

P. O. Crawford, of the California-Oregon Power Company, Medford, Ore., was recently in San Francisco, Calif., on his way to the meeting of the technical section of the Pacific Coast Electrical Association held at Los Angeles Sept. 17-19.

C. M. Brewer, vice-president and general manager, together with Z. E. Merrill, assistant general manager, Mountain States Power Company, Albany, Ore., spent the week of Sept. 22 in Spokane, Wash., and vicinity in company with Lee Bennett, local manager of the company's properties in northern Idaho.

J. F. Anderson, manager appliance sales, Southern California Edison Company, Los Angeles, Calif., recently spent several weeks in the East, and while there visited the cities of Boston, Mass., New York City, Chicago, Ill., and Portland, Me.

D. F. McCurrach, rate engineer, of the Northwestern Electric Company, Portland, Ore., attended the Oregon Irrigation Congress at Klamath Falls, the early part of September.

Ralph J. Cordiner, special representative of the Edison Electrical Appliance Company, Portland, Ore., is spending a week or two in Spokane in connection with the cooking school which will be conducted by the Spokane Chronicle during the week of Sept. 29.

J. H. Fenton, manager industrial department, Westinghouse Electric & Manufacturing Company, Los Angeles, Calif., recently returned from an extended trip to East Pittsburgh, Pa., New York City, Springfield, Ohio, and other Eastern cities, visiting the various factories of that company.

G. F. Hain, formerly with the Portland, Ore., office of Westinghouse Electric & Manufacturing Company, was transferred to the Spokane, Wash., office as of Aug. 1, as special representative in charge of electrical merchandising. Mr. Hain replaces C. H. Rice, resigned.

William H. D. Connah, of the Detroit Edison Company, Detroit, Mich., was a recent visitor to San Francisco, Calif.

Harris J. Ryan, professor of electrical engineering at Stanford University, was a recent visitor to Los Angeles, Calif., during which time he delivered the principal address before the meeting of the Technical Section, Pacific Coast Electrical Association.

Robert Buckles, who has been representing the Westinghouse Lamp Company in the Pacific Northwest territory, has been transferred to the San Francisco office of the company.

Alfred Bachrach, in charge of general service department, General Electric Company, Los Angeles, Calif., has just recently returned from an extended trip. While away, Mr. Bachrach visited Portland, Ore., Seattle, Wash., Kansas City, Mo., Chicago, Ill., and El Paso, Texas.

George E. Lewis, executive manager of the Rocky Mountain Committee on Public Utility Information, will represent Denver, Colo., traction interests at the coming annual convention of the American Railway Association at Atlantic City, N. J.

Wm. F. Raber, general manager, L. M. Klauber, general superintendent, and A. E. Holloway, superintendent of the commercial department, of the San Diego Consolidated Gas & Electric Company, attended the Pacific Coast Gas Association convention at Santa Barbara, Calif., Sept. 8-12.

William Hofflich has been appointed agent at Albany, Ore., for the Delco farm lighting units, Frigidaire electric refrigerators and Savage washers. Mr. Hofflich will make his headquarters at the Willard Electric Store, Albany.

William H. Galvani, engineer in charge of property, right-of-way and tax matters for the Pacific Power & Light Company, Portland, Ore., has been retired from active service with that company and has taken up his residence at Seaside, Ore. He still holds his position with the company and will, through frequent visits to Portland, keep in touch with the affairs of his department, so that his many years of experience may be utilized in an advisory way.

Ellery W. Stone, president of the Federal Telegraph Company, and Dr. Frederick W. Kolster, inventor of the Kolster radio compass left for Washington, D. C., on Sept. 25 to represent the marine commercial interests in a conference to be held in Washington on Sept. 30. Mr. Stone and Dr. Kolster were invited by Secretary Herbert Hoover to attend the conference.

Leslie W. Nims has been made manager of the Idaho Falls division of the Utah Power & Light Company, Idaho Falls, Utah.

Lloyd Garrison, of Salt Lake City, deputy state engineer of Utah since April, 1921, has been appointed state engineer to succeed R. E. Caldwell, resigned. Mr. Garrison was born in Illinois in 1884, and spent his youth there. He graduated from the University of Illinois in 1907, with a degree in electrical engineering. After leaving college he took an apprenticeship course with the Denver Gas & Electric Company, in gas and electrical engineering, in Denver. He went to Salt Lake City in 1909, and became associated with the Utah Light & Railway Company, predecessor of the Utah Power & Light Company, serving with this organization in the capacity of commercial engineer until the latter part of 1915. In the meantime Mr. Garrison had been studying law, and was admitted to the bar early in 1916. When the war broke out he entered



LYDD GARRISON

actively into service as a captain in the 145th Field Artillery. He served in this capacity both in the United States and overseas until the close of the war and is now a major in the Engineers' Reserve Corps. In April, 1921, he received the appointment as deputy state engineer. Due to his legal training and his experience in the work of the state engineer's office, gained during the past three years, Mr. Garrison is exceedingly well qualified to handle the duties of his new position as state engineer.

R. W. Stubbs, president of the Stubbs Electric Company, Portland, Ore., was a recent visitor to San Francisco, Calif.

D. D. Sturgeon, prominent Denver, Colo., electragist, has been appointed a member of a special committee of the Chamber of Commerce in that city to study the road situation and especially the possibilities of constructing a new road to connect Fort Logan with that city.

George W. Bixler, advertising manager of the Public Service Company of Colorado, Denver, Colo., has returned from an extended European trip during which time he attended the convention of the Advertising Clubs of the World in London.

G. D. Buck, newly appointed head of the electrical merchandising department of the Public Service Company of Colorado with headquarters in Denver, Colo., has returned to his former location at Durham, N. C., to complete arrangements for the removal of his family to Denver.

Al. C. Joy, manager of the publicity department of the San Joaquin Light & Power Corporation, Fresno, Calif., was a recent visitor to San Francisco. Mr. Joy attended a meeting of the technical section of the Pacific Coast Electrical Association at Los Angeles, Sept. 17-19.

Frank Perry, of the Wong & Perry Electric Company, Boston, Mass., was recently in San Francisco, Calif.

Elbert Kramer, formerly representative in southern California of Landers, Frary & Clark, New Britain, Conn., has recently been transferred to the Pacific Northwest, where he will be the Northwest manager for that organization. Mr. Kramer attended the Carnegie Institute of Technology, Pittsburgh, and after his graduation from that institution, completed the apprenticeship course of the Westinghouse Electric & Manufacturing Company at East Pittsburgh, Pa. He remained with that



ELBERT KRAMER

organization for a period of ten years, during most of which time he was associated with the San Francisco, Calif., office. He first went to San Francisco to look after the Westinghouse exhibit at the Panama-Pacific Exposition in 1915, at the close of which he joined the San Francisco office. Mr. Kramer was active in electrical affairs in Los Angeles and southern California, and at the time of his departure was chairman of the Entertainment Committee of the Los Angeles Electric Club.

A. A. Smith, secretary and general counsel of the Eastern Oregon Light & Power Company, Baker, Ore., was one of those present at the Oregon Irrigation Congress at Klamath Falls, early in September.

E. G. Robinson, president and manager of the Molalla Electric Company, Canby, Ore., was in Klamath Falls early in September, where he attended the Oregon Irrigation Congress.

Granville H. Peets, of the public relations department of the Puget Sound Power & Light Company, Seattle, Wash., recently addressed the Kiwanis Club of Vancouver, Wash.

Walter F. Price, executive secretary of the California State Association of Electrical Contractors and Dealers, San Francisco, has gone to West Baden, Ind., to attend the annual convention of the Association of Electragists, International.

Clyde Chamblin, president of the California Electrical Construction Company, San Francisco, Calif., has gone to West Baden, Ind., to attend the annual convention of the Association of Electragists, International.

Glen W. Willard has purchased the interest of William Hoflich in the electric store recently conducted by the two men at Albany, Ore., and will conduct the business in the future. He will continue to do a general retail and contracting business under the firm name of the "Willard Electric Store."

L. C. Mack, proprietor of Mack's Electrical Supply Company, Eugene, Ore., has formed a partnership with **C. A. Elkins** and has opened a new and larger store. Mr. Elkins was formerly with the engineering department of the Southern Pacific Company at Beaverton, Ore. The business will in the future be known as "The Electric Store."

Grover A. Anderson, for several years with the Electric Appliance Company, San Francisco, Calif., and more recently sales manager of that company, has resigned to become affiliated with the Handy Hanger Manufacturing Company, San Francisco.

Percy H. Booth, Pacific Coast sales manager, Edison Electric Appliance Company, Chicago, Ill., recently returned from Chicago and other Eastern points.

W. E. Smith, for the past fifteen years manager of the electrical department of Marshall-Wells Hardware Company, Portland, Ore., has resigned from that company to become affiliated with the Baldwin Pacific Company, Pacific Coast representatives of radio and electrical specialties.

A. B. Day, vice-president and general manager of the Los Angeles Gas & Electric Corporation, has been made a member of the executive committee of the Pacific Coast Gas Association.

William H. Talbott, supervisor of the meter department, San Diego Gas & Electric Company, San Diego, Calif., recently spent several days in Los Angeles attending the meetings of the Technical Section, Pacific Coast Electrical Association. Mr. Talbott is also a member of the Meter Committee and remained over to attend a meeting of that committee.

Fred S. Mills, Pacific Coast representative, Curtis Lighting, Inc., Chicago, Ill., recently returned from an extended trip to Chicago and other Eastern cities, where he visited the various factories of the company.

J. C. Clark, until recently associate professor of electrical engineering at Stanford University has resigned to accept a professorship in Iowa State College, electrical engineering department. His duties in his new position will consist in the direction of the work of graduate students and in the conduct of research. Mr. Clark has been a member of the staff at Stanford for the past twelve years during which time he has



J. C. CLARK

been active in the affairs of the American Institute of Electrical Engineers, having contributed a number of papers and served as chairman of the San Francisco Section of the Institute. He is an alumnus of Iowa State College and of Harvard University.

Z. E. Merrill, assistant general manager, Mountain States Power Company, Albany, Ore., was among those who attended the Oregon Irrigation Congress at Klamath Falls in September.

Obituary

Arthur S. Huey, a vice-president of the San Diego Consolidated Gas & Electric Company and other Byllesby properties on the Coast, chairman of the board of H. M. Byllesby & Company, and of the Standard Gas & Electric Company, died of pneumonia Tuesday, Sept. 9, in Chicago, Ill. Mr. Huey was born in Minneapolis, in 1862, and had been identified with the electrical industry since 1885. He had been a vice-president of H. M. Byllesby & Company since the founding of that organization in 1902. Although starting his career as a printer, Mr. Huey did not long remain at this vocation. He became associated with the management of a group of theaters in Minneapolis, from which, in 1885, he was made the representative of the Edison (manufacturing) Company at Minneapolis. After the consolidation of that company with the Thompson-Houston Electric Company, he became associated with the Northwestern General Electric Company as manager of the St. Paul, Minn., office. He was also a pioneer in the development of electric vehicles.

William A. Tenney, president of the Clifton Manufacturing Company, Boston, Mass., died on Aug. 27.

Trade Outlook

San Francisco

As is the case in all lines of business, buying in the electrical industry is still exceedingly cautious due to the uncertainty of the market. Industrial business is fairly good, and some good orders for lighting units, chiefly for office buildings, have been reported. Appliance sales are fair. The policy of strict economy is being continued by central stations, maintenance expenses being reduced as low as possible on account of the increased cost of generation of power by steam plants.

Shipping circles are active, as large shipments of California products are moving at this time by both rail and water. Cargoes of dried and canned fruits are being exported to England and France, and miscellaneous cargoes are going to South and Central America and Atlantic ports.

Local manufacturers and jobbers report conditions fair with more activity shown in buying as fall approaches, particularly as applied to dry goods, women's clothing, hardware and furniture.

Estimates of the amount in orders placed for immediate or early delivery as the result of annual Market Week set the figure at \$10,000,000. This is regarded as an indication of reassuring conditions.

Salt Lake City

Dividend disbursements of \$701,000 made during the past month by three Utah silver-lead mines indicate the prosperity of that industry and its importance to this section. Even more encouraging than present dividends is the assurance in the metal markets of the world that the indicated future course for silver, copper and lead, Utah's major metals, is brighter than at any time in years.

Bank deposits in Salt Lake banking institutions for the second quarter of the present year show material increases over the first quarter of 1924 and the second quarter of 1923, reflecting an advance in general prosperity not only in Salt Lake, but also in the country tributary to the city.

An example of increased business activity is to be found also in a large increase in bank clearings for the past few months as compared with similar periods of last year and with the preceding months of this year.

Jobbers report better business conditions than existed thirty days ago, with a favorable outlook for fall.

Seattle

A steady improvement in the lumber industry and a strengthening of the lumber market are the most encouraging features of the Northwest industrial situation. A number of lumber plants, closed since middle summer, have been reopened, and logging camps are resuming activities all through the Puget Sound district.

The retail situation is improved with

the reopening of fall demand, and wholesalers report demand quickening. Prices are fairly well stabilized at about the level of last year.

The status of employment throughout the state is showing a decided improvement with the reopening of lumber activities and the demand for harvest hands. The building situation continues satisfactory. Reports of heavy constructional activities are received from most of the Puget Sound cities.

Electrical appliances are moving freely, especially lamps and domestic equipment. The expected increase in the movement of motors and equipment to industrials has not yet materialized to the extent predicted, but there is no discouragement felt on this score as the increase is steady. Prices are still holding, although the trend is upward. Stocks in practically every line are in good shape, and dealers and jobbers are equipped to care for every need of the fall and winter trade.

Los Angeles

Business conditions in Los Angeles are gradually showing signs of improvement and each succeeding two weeks' period shows a gradual tendency for the better. In all branches of industry there is a prevailing feeling of optimism which is accounted for by the fact that the low point of June and July has passed and that present conditions and future outlook warrant it. There is still an abundance of labor to meet all demands, and though the building industry is not as active as it was at this time last year, it has picked up considerably during the past month. Bank clearings continue to show an increase, while harbor activities are above those of any other time.

Conditions in the electrical industry compare favorably with those in other branches, and though there is not a very large demand for retail appliances, business conditions are improving gradually. The improvement is particularly apparent in the wholesale and manufacturing lines, and the outlook is considerably brighter than that of three months ago. The sale of radio apparatus and supplies which has kept up fairly well all summer has increased. Collections though a bit slow are much improved.

Portland

Retail business is of fair volume and improving. Jobbers are optimistic over the prospects of larger sales, due to the higher prices on most agricultural products. The large volume of building construction, coupled with continued fair weather, keeps skilled labor employed.

The lumber industry is steadily improving. The demand is considerably above production, and prices consequently have advanced. The increase in demand is largely attributed to greater consumption in agricultural districts. The supply of logs is below normal and prices improving.

The movement of apples is increasing but is behind last year. Prune drying is about completed and a number of shipments will go forward this month. Estimates of the Columbia River salmon pack indicate that about 290,000 cases of salmon of exceptional quality have been packed. This is about 12 per cent below last year. Wheat is not selling freely, the farmers holding for still higher prices.

Building permits in Portland for August reached well over three million dollars. At the end of August the year's total was about \$23,000,000.

Denver

Reports from the agricultural regions continue to show improvement, to such an extent in many places that present crops will be record breakers even in the light of the early summer water shortage. This condition has reflected a growing optimism in other lines of business in the country based mainly on available cash for the farmer which will permit him considerable latitude in buying, such as has not been in evidence for several years.

Grain crops are uniformly good. Early campaign reports from the sugar companies indicate that the beet crop, unless hit by a heavy freeze, will be up to expectations.

Oil continues to be the chief subject in certain sections. Those cities close to the discovery wells are commencing to get their first real business as a result of this new activity. The railroads are getting a good haulage of tank cars. Supply houses in this city report increasing purchases from the oil fields. Labor conditions are good.

There has been a slight recession in the amount of building in this city but the drop-off for the remaining months is not believed sufficient to reduce the total to a figure below the record established last year.

Spokane

Business in general has dropped off during the past month and a revival is not expected to take place until after election. The packing plants are working at normal output, with decrease in prospect, however, due to falling off in deliveries of livestock. In banking circles, a tendency to relax restrictions on loans and mortgages is noted, a fact which will no doubt stimulate building activities during fall and winter. Several of the larger industrial concerns are now planning improvements and extensions which have merely been discussed for a number of years. This shows a strong feeling of confidence in the future.

In retail business lines there is a strong note of pessimism, which seems to be due rather to a state of mind than to any solid foundation of fact. During the week of Sept. 8 The Washington Water Power Company sold \$5,000 worth of electrical merchandise, reaching the maximum for the year.

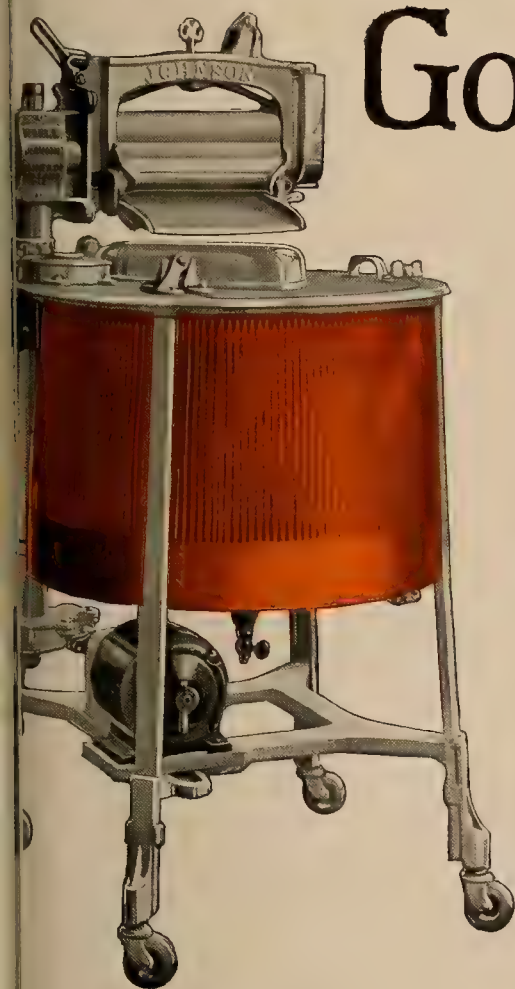
Mining activities in the Coeur d'Alene district of Idaho, British Columbia and northeastern Washington, are characterized by greater interest in prospecting and development of old properties than has been experienced since the war.

Journal of Electricity

25 Cents a Copy

October 15, 1924

San Francisco



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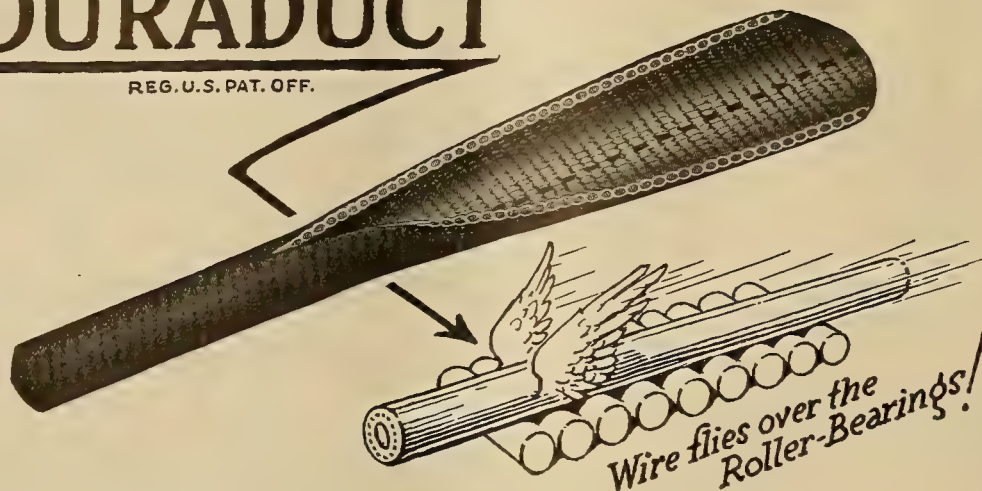
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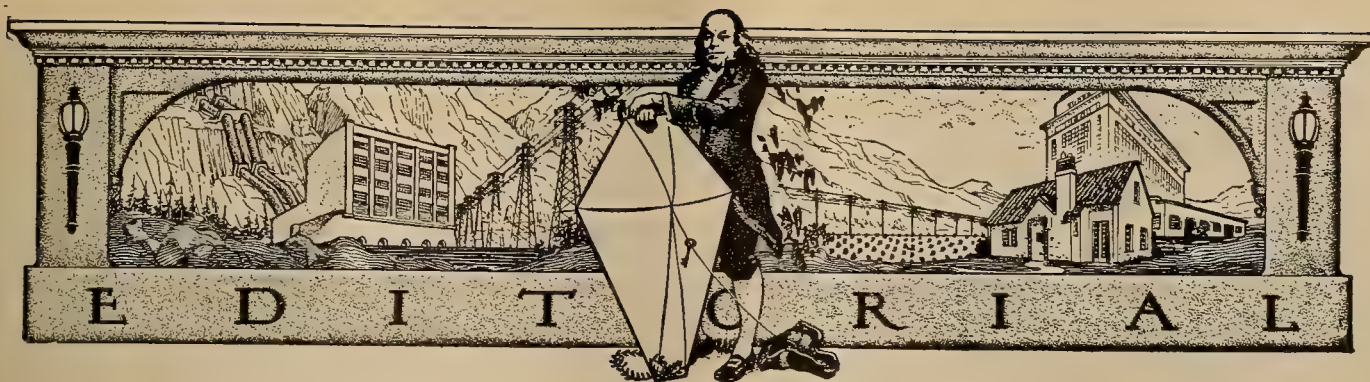
You know how it is when fishing a long length of ordinary loom. The waxed braid on the wire slides back, bunches up, clogs the tube; you do a lot of cussing, and finally pull the wire out, cut off the bunch, and start again nursing the wire through the tube.

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Individual Initiative versus Socialism

REGARDLESS of what one's ideas may be on the subject of national politics, there can be no question whatever as to the attitude of the Republican party with respect to government ownership. President Coolidge and many distinguished members of his cabinet, including Mr. Hoover, have expressed themselves vigorously and in no uncertain language on this all-important subject. On another page of this issue we present to our readers excerpts from an address delivered by Mr. Hoover on Sept. 29. This address was made over the radio and broadcast from many nationally interconnected stations. Mr. Hoover quotes Senator La Follette as follows: "I am for government ownership of railroads and every other public utility—every one." Truly the action taken by the California Supreme Court denying to the La Follette party a place on the ballot other than under the Socialist designation has isolated the germ, so to speak, and stamped the La Follette campaign as frankly, openly and avowedly socialistic in every sense of the word. Mr. Hoover says, "Either we are to remain on the road of individual initiative, enterprise and opportunity regulated by law, on which American institutions have so far progressed, or we are to turn down the road which leads through nationalization of utilities to the ultimate absorption into government of all industry and labor."

It is the rankest kind of folly for men to shrug their shoulders with indifference at this situation. If perforce they feel that they are exempt, because in California at present only the power companies are being attacked, they should realize that this is simply a stage toward the achievement of the socialist view looking toward, as Mr. Hoover says, "the ultimate absorption into government of all industry and labor." A fire started may be checked by prompt action. Once let the fire of government ownership grow beyond control and the end is destruction of all the forces that have made of the United States the greatest nation in the world.

The Commissioner Reverses His Decision

NOW comes the California Railroad Commission which on Oct. 11 denied the application of the Southern California Edison Company for a temporary rate increase to cover extraordinary operating expenses due to the abnormal drought conditions of last winter. As reported in the Journal of Electricity

Aug. 15, 1924, the original decision of the commission made Aug. 1 granted the contention of the Southern California Edison Company, in which judgment three commissioners—Brundige, Martin and Whittlesey—concurred, a minority report dissenting having been rendered by Commissioners Seavey and Shore.

Strange to relate, directly following the rendering of this decision Commissioner Whittlesey joined with Commissioners Seavey and Shore in reopening the case. Now Commissioner Whittlesey has reversed himself with the result as noted above. Abstracts from the text of the decision of the commission as set forth on another page in this issue will make interesting reading.

We have felt that the Southern California Edison Company was entitled to favorable action, setting forth that in our opinion the right to regulate carried with it an obligation to protect. There is always room for a difference of opinion. All of us cannot be expected to think alike on questions of this nature. Nevertheless, in view of the history of this case it would seem not unreasonable for Commissioner Whittlesey now to join with Commissioners Brundige and Martin and have a rehearing of the rehearing.

Facts Are Revealed in the Appliance Survey

THEORY is one thing and practice is something else. There has been a great deal of discussion within the industry, a great deal of theorizing as to who should sell electrical appliances. There is, however, such a thing as fundamental economic law. We have the old saying that water always seeks its own level, and that forces exerted in certain directions will invariably follow the lines of least resistance.

Our sister publication, the Electrical World, has conducted a nation-wide survey showing who actually is selling electrical appliances in certain large cities in the United States. The Journal of Electricity, following the same course of investigation, has made a similar survey in a number of cities and towns on the Pacific Coast in order to show local conditions and supplement the national data published by the Electrical World. In this issue are presented the results of a study covering seven small cities and towns on the Pacific Coast ranging in size from 3,000 to 25,000 population. These data were presented before a meeting of the Pacific Coast Elec-

trical Supply Jobbers' Association at Del Monte, Sept. 26 last, and are printed in full for the benefit of all of our readers. It would appear from the data presented that a number of preconceived ideas on this subject are at least subject to revision. It is indicated that all appliances go through a series of transitory stages from pioneer items, when they are new, untried and therefore regarded with a certain amount of question on the part of the consumer, to the last stage when they become staples and meet with ready acceptance.

The Journal's research would indicate that responsibility for pioneering falls largely upon the central stations who are best able to carry the large expense incident thereto in consideration of the value of the load thus created upon their lines. When items reach the staple or ultimate stage in their development they may be sold by any merchant, by the department store, furniture store, music store, general merchandise store, electrical specialty shop, or the establishment of the contractor-dealer.

In a few words, this seems to be the evolutionary process through which each appliance goes. Facts are the most interesting things in the world, and, incidentally, are frequently the most difficult to obtain. We believe that the jobbers, dealers and manufacturers as well as central stations may well afford to study the article carefully. In the meantime, discussion of its conclusions, for publication in the Journal, will be most welcome.

Taking Advantage of the Annual Fairs

THE fall season annually brings with it the round of state, county and district fairs. These events are always favored with large attendance of people who are interested in all of the things that help to make life more enjoyable. Such occasions offer an opportunity for telling the message of electricity that is perhaps not equaled throughout the year. In the first place, the visitors are in a receptive mood and are impelled by the motive of interest. Secondly, the industry has a real story to tell, one of service. Practical working demonstrations of the equipment before throngs often totaling thousands is bound to have a beneficial reaction and the past has proved that such exhibits bring a return long after the fair is over. To those who are seriously interested in promoting the use of electrical devices, particularly those that make home life happier, this is a season of unusual opportunity.

The Outlet —

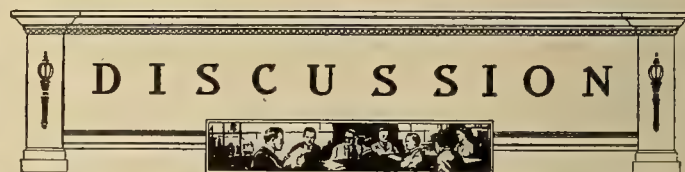
The Merchandiser's Unit.

WHAT is an outlet? A small boy might say it is a hole with a ring around it. An outlet from an electrical standpoint, however, is more than a mere receptacle in which a service plug may be inserted and connection made through which electrical energy may be tapped and utilized for a thousand purposes.

Mr. E. W. Day has given us a new concept of the significance of the outlet in an article published elsewhere in this issue. In analyses of trade, market

and other conditions we must base our calculations upon some definite predetermined unit. The Bureau of Census tells us all sorts of things about ourselves in per-capita terms. Finance deals with the dollar, electrical energy deals with the kilowatt and steam engineering with the horsepower. The commercial phase of the electrical industry that deals particularly with appliances, supplies and wiring has lacked this unit. Mr. Day comes forth and offers the outlet as a term which is admirably adapted to the expression of just what is what in electrical merchandising. Every outlet, according to Mr. Day, represents a definite and cumulative value to all factors of the industry, so therefore he has instituted and analyzed for the benefit of our readers the significance of the outlet as a yardstick, a unit of measurement upon which can be determined the volume of business available to our merchandising friends and the effect upon their interests of every additional outlet wherever it may be installed.

We recommend to our readers a careful study of this unique and interesting suggestion.



Turlock District Raises Objections to Recent Article

To the Editor:

Sir: Referring to the article in the Journal of Electricity for September 15 entitled "When Government Goes Into Business" I would like to call your attention to the following facts:

The Turlock and Modesto Districts are two entirely separate entities and should not be referred to as the Modesto-Turlock District. Each District has its own Board of Directors and officials and determines its own business policies.

The body of the article contains several misstatements which I would like to correct, as follows:

In the first place, while it is true that the Pacific Gas and Electric Company made an offer to purchase the output of the Don Pedro Power Plant, the price offered was not the market value for the power and the contract offered was not acceptable from the standpoint of the Turlock Irrigation District, as it did not make a clear and bona fide offer for such purchase. Mr. Leurey made a report covering the conditions as he saw them for the Modesto District, but he made no investigation with reference to the conditions in the Turlock District. The Turlock District made its own investigation and the report made no recommendations either for or against the local distribution of power but stated what the people of the district could expect in the event they decided to distribute. Acting on this information, the Turlock District voted ten to one to distribute their own power, although it was stated that it could not be put on a paying basis for probably eight years.

In regard to the manufacture of fertilizer, I stated that omitting all charges for power or for raw material, the off-peak power during the irrigation season could be used for the manufacture of fer-

tilizer. However, as the District has sold all of its surplus power, this question of fertilizer has never been investigated.

The Turlock District built its own transmission line from the power plant to the Turlock District, and the Modesto District later decided to pay us for transmitting their energy to Turlock and taking delivery at this point for themselves, rather than construct their own transmission line to the power plant.

In investigating the possibility of disposing of the Don Pedro power within the Turlock District, it appeared that the greatest market lay in the development of the electric home and the use of electricity for cooking and heating, in addition to that used for lighting. With this idea in mind, the matter was discussed with local merchants in regard to the handling of electric ranges, and they did not feel in a position to guarantee any results in the sale of electric ranges; consequently the Turlock District opened its own store for the purpose of handling electrical supplies and electric ranges. Owing to the insistent demands from our consumers, we have added to the original list certain appliances such as washing machines, etc., in order to better take care of our trade. The District does no wiring, nor does it handle lighting fixtures. The District recommends to its consumers to have the work done by recognized wiremen, and we inspect all jobs and our standard for wiring is more rigid than existed in the district prior to our commencing operation. You will see, therefore, that we have not gone into merchandising as extensively as a great many other power companies, and were forced into this field by the fact that the local dealers were unable, due to financial or other reasons, to develop the field themselves. Our retail store certainly does not handle automobile supplies or any equipment other than that stated above.

We feel that by increasing the sale of electric ranges from an average of 10 or 15 a year to nearly 300 a year, that we are not only assisting in the development of the electrical industry, but we are bringing great advantages to the farmer in that we enable him to have all the conveniences of city life at his disposal.

In closing, I would also call your attention to the fact that the District used its utmost endeavor to buy out the Pacific Gas and Electric Company within the boundaries of our District, and this company not only refused to sell but placed every obstacle in the path of condemnation proceedings, so that we were forced against our will to develop an independent distribution system.

Also, I would say that in the above letter wherever I have used the word "District" I refer entirely to the Turlock Irrigation District, and am in no way discussing the policies or methods of the Modesto District.

Although the Electrical Department of the Turlock Irrigation District is now on a paying basis, we do not believe that this is any argument whatever for the Water and Power Act, but is merely an argument against it, taking into account the different conditions that would exist between the State of California entering the power business and that which exists by virtue of a comparatively small, closely-knit political organization handling electrical power as a byproduct.

ELECTRICAL DEPARTMENT,

R. W. SHOEMAKER,

Superintendent.

A Resolution from Modesto

To the Editor:

Sir: Herewith please find certified copy of a resolution adopted by the Board of Directors in regular adjourned session, Sept. 30, 1924.

Your truly,

MODESTO IRRIGATION DISTRICT,

By C. S. ABBOTT, Secretary.

Modesto, Calif.

Oct. 1, 1924.

Resolution

Whereas, there was published in the September 15th issue of Journal of Electricity an article "When Government Goes Into Business" in which certain flagrant misrepresentations were made in an effort to discredit the distribution of Don Pedro Power in the Modesto and Turlock Irrigation Districts, and

Whereas, distribution of power has proved a marked success and an asset of inestimable value to the Districts as evidenced by the large net revenue and the fact that the Modesto and Turlock Districts are among the most prosperous of the state this year, and

Whereas, it appears to this Board that this article is an unwarranted attack upon the honor and good name of the two oldest and best irrigation Districts in the State of California,

Therefore, Be It Resolved, that the Board of Directors of the Modesto Irrigation District most emphatically deny the untrue statements in this article and said Journal should apologize for the wrong done the Districts.

Be It Further Resolved, that a certified copy of this resolution be sent the Journal of Electricity and to both local papers.

I, C. S. Abbott, Secretary of the Board of Directors of the Modesto Irrigation District, do hereby certify the foregoing to be a full, true and correct copy of a resolution adopted by said Board, September 30, 1924.

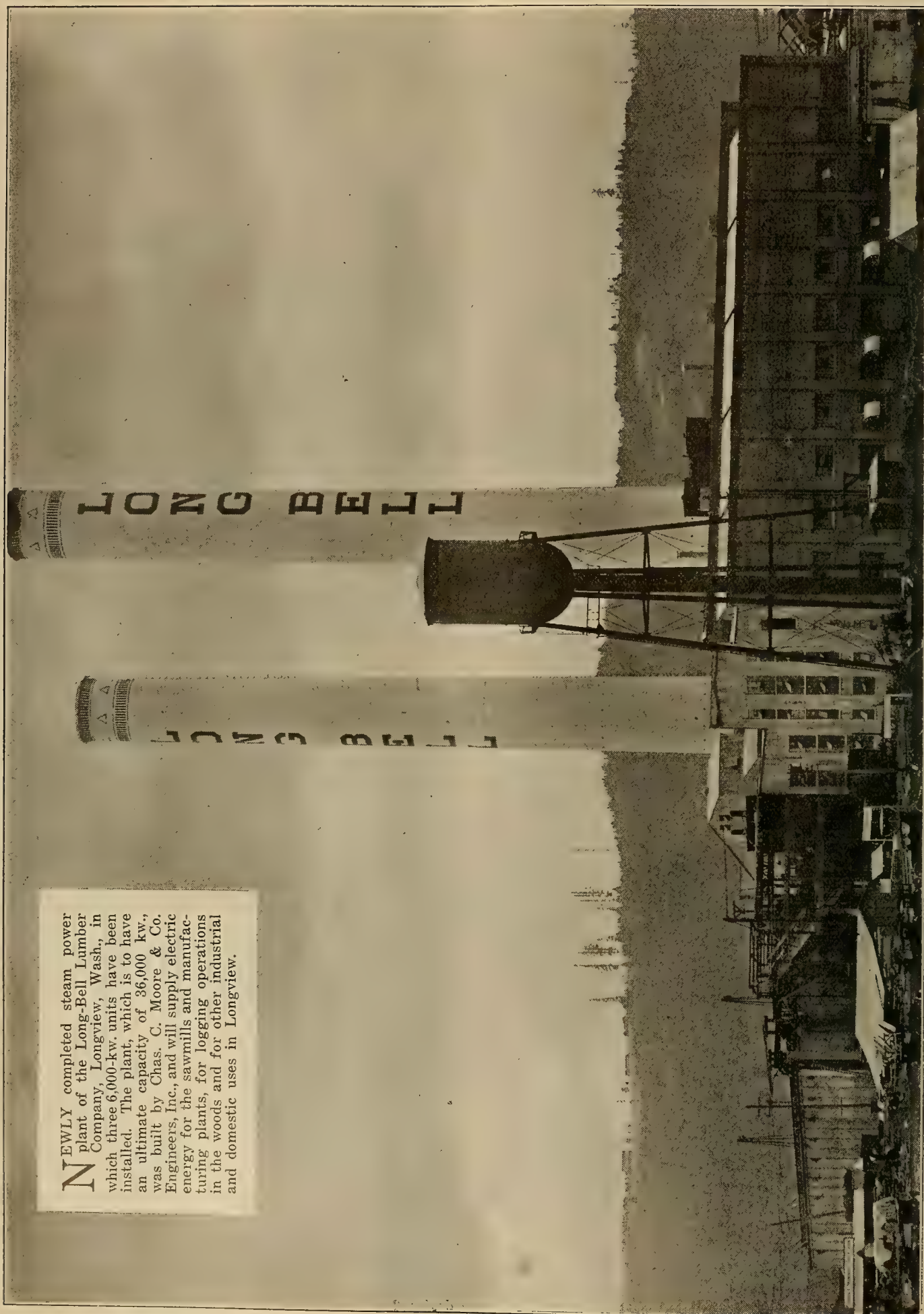
MODESTO IRRIGATION DISTRICT,

C. S. ABBOTT, Secretary.

EDITOR'S NOTE

The above resolution denies in general terms the allegations in an article entitled "When Government Goes Into Business," that appeared in the Sept. 15 issue of the Journal of Electricity. The apology demanded by the Board of Directors of the Modesto Irrigation District must be withheld by the Journal of Electricity until the following questions are conclusively answered in the negative:

1. Does or did the Modesto Irrigation District prepare a list of "approved merchants" that includes only those who purchase electrical energy from the District?
2. Does or did the Modesto Irrigation District provide placards stating "This firm is helping to reduce taxes by using Don Pedro electric power," or words to that effect?
3. Does or did this action (referred to in questions 1 and 2) constitute an approval of the merchants using Don Pedro power and, conversely, a disapproval of those not doing so, with resultant injury to the latter?
4. Does or did the Modesto Irrigation District, unless special request is made, inspect electric services only as far as the meter?
5. Does or did the Modesto Irrigation District sell wiring materials with the understanding that the purchaser may or might employ a contractor or do the wiring himself?
6. Does or did the Modesto Irrigation District sell electric wiring devices and appliances at about 20 per cent or less above jobber's price to the District?
7. Does or did the Modesto Irrigation District maintain and use a supply of mimeographed letters, addressed to the private power company serving the city, notifying said company that service is to be discontinued on the premises of the consumer as soon as the District shall have made connection with the premises of the consumer who was previously receiving service from the private company?
8. Is it true that the welfare of the electrical contractor-dealers doing business in Modesto has been adversely affected since the Modesto Irrigation District has been competing with them in the retailing of electrical appliances and wiring devices?



NEWLY completed steam power plant of the Long-Bell Lumber Company, Longview, Wash., in which three 6,000-kw. units have been installed. The plant, which is to have an ultimate capacity of 36,000 kw., was built by Chas. C. Moore & Co. Engineers, Inc., and will supply electric energy for the sawmills and manufacturing plants, for logging operations in the woods and for other industrial and domestic uses in Longview.

Appliance Distribution in Seven Small Pacific Coast Cities

THE interest created in the movement inaugurated by Electrical World early this year to determine who is selling electrical appliances in the cities and towns of the United States has been so widespread that the Journal of Electricity has extended these surveys to seven of the small cities and towns of the Pacific Coast states ranging in size from 3,000 to 25,000 population. The surveys were made in conjunction with the editors of Electrical World as that publication is making a national survey of the situation and will shortly publish the results for a large number of small cities.

The seven cities selected were taken at random with no reference to local conditions. Three cities, one each in Washington, Oregon and Utah, were surveyed and the remaining four were in California. In three of the cities the central station is actively merchandising; in four it is not. Two of the cities are served by municipal distribution systems. It was found during the course of the surveys that any unusual local condition such as the general business situation, the proximity of the city to a large metropolitan district, the presence or absence of a local electrical league, etc., had a definite bearing both on the volume of appliances sold and on the distribution of sales through the various outlets. Before attempting to set down any of the conclusions resulting from the surveys, a short sketch of the situation in each city will be presented.

Interest Not Keen in City I

Lack of interest in the appliance business and the small amount of business being done by all dealers were the impressive features of City I, a town of 3,500 in western Washington, dependent for its existence upon a prosperous dairying and farming region.

The city has only two electric stores, one of which makes no pretense of doing an appliance business. This establishment is on a side street and depends almost solely upon wiring and fixtures, although lamps and a small stock of appliances are carried for the convenience of wiring customers. The other appliance store is run as a department of an establishment handling cameras, stationery, pictures, picture frames, etc. The proprietor of this store was not sufficiently interested in his electrical

IN extending the movement inaugurated by Electrical World early this year, the Journal of Electricity has completed surveys in seven small Pacific Coast cities to determine who is selling electrical appliances. The results, which should prove of great interest to every branch of the electrical industry, are presented herewith. The story does not include the editor's opinions but merely the criticisms and statements of the men interviewed. It attempts to do nothing more than present a cross section of the appliance distribution situation in the small cities of the West.

department to be able to tell whether it was making money.

The central station maintains a fair appliance store in connection with its interurban depot, but has not been very active in the appliance business in the past. The company plans, however, to remodel its store and aggressively enter the merchandising field. Ranges have been successfully exploited by the power company in this and other districts and a creditable showing has been made.

Of the non-electrical outlets there were two hardware stores and one drug store, all doing a small appliance business. One hardware dealer has discontinued his line of washing machines and vacuum cleaners, because, he stated, competition from outside house-to-house sales crews which campaign the territory at irregular intervals, had killed this business.

In this city the two electrical dealers are doing 45 per cent of the appliance business, the central station 38.4 per cent and the hardware stores 13.2 per cent. The balance is being done by the drug store.

Complete Harmony in City II

Complete harmony and a friendly spirit of co-operation among the retail dealers selling appliances were found to exist in City II, a town of 8,000 inhabitants in eastern Oregon. Two electrical dealers, the central station and one hardware store are doing practically all of the appliance business. A furniture store handles washing machines and vacuum cleaners. The two dealers are doing 40.7 per cent of the business, the central station 38.7 per cent and the hardware store 17.4 per cent.

The power company only recently has become active in the merchandising business. It is planning to build a larger appliance load by devoting more effort to this phase of its business. Although the company has a gas as well as an electric distribution system it sells as many electric ranges as possible. At the time this survey was made an electric range campaign was under way which promised to be very successful.

The one hardware store likes the appliance business and is planning to become more aggressive in the near future upon the completion of a new store. Its electrical business has been increasing at the rate

CITY I

	Washing Machines	Vacuum Cleaners	Flat- irons	Curling Irons	Toasters	Perco- lators	Small Heaters	Waffle Irons	Total Sales Each Class of Store	Per Cent of Total for City
Hardware Stores										
Store "A".....	12	.....	20	.....	12	6	.....	.....
Store "B".....	.....	.....	15	10	.....	.....	.....	.....
Total.....	12	.....	35	10	12	6	.....	.....
Value.....	\$1,500	.....	\$210	\$20	\$72	\$72	.....	.....	\$1,874	13.2
Per Cent of Appliance Sales.....	80.0	.....	11.2	1.0	3.8	3.8	.....	.....
Contractor-Dealer										
Store "C".....	8	.....	12	.....	12	6	.....	.....
Store "D".....	24	12	50	150	60	50	.....	.....
Total.....	32	12	62	150	72	56	.....	.....
Value.....	\$4,000	\$630	\$372	\$300	\$432	\$674	.....	.....	\$6,408	45.0
Per Cent of Appliance Sales.....	62.5	9.8	5.8	4.7	6.7	10.5	.....	.....
Drug Stores										
Store "E".....	.....	.....	25	50	20	10	.....	.....
Value.....	.....	.....	\$150	\$100	\$120	\$120	.....	.....	\$490	3.4
Per Cent of Appliance Sales.....	.....	.....	30.6	20.4	24.5	24.5	.....	.....
Central Station										
Value.....	24	36	36	30	12	20	.....	.....
Value.....	\$3,000	\$1,890	\$216	\$60	\$72	\$240	.....	.....	\$5,478	38.4
Per Cent of Appliance Sales.....	54.7	34.5	3.9	1.1	1.3	4.5	.....	.....
Grand Totals										
All Dealers.....	68	48	158	240	116	92	.....	.....
Value.....	\$8,500	\$2,520	\$948	\$480	\$696	\$1,106	.....	.....	\$14,250	100.0
Per Cent of Total Sales.....	59.6	17.7	6.6	3.4	4.9	7.8	.....	.....

of 25 per cent a year. As this city is the wholesale center for a large mining, stock-raising and lumbering region, the hardware dealer jobs, among other things, a standard line of electrical appliances.

City III Has No Electrical Dealer

Not a single electrical dealer—such was the situation in City III, a town of 12,000 population in Utah. One wiring contractor who has maintained a store and sold appliances for a number of years announced that upon the closing out of his present stock he would forsake merchandising and devote his entire attention to wiring. He gave as his reason the fact that he cannot compete successfully with the power company, the department store and the hardware store. As these establishments have aggressively gone after the appliance business, his sales have dropped off until today he is forced to admit failure.

The central station maintains an appliance store at its district offices and is actually merchandising appliances and ranges. It maintains a fair attitude toward the other retail outlets for appliances.

A large general merchandise store handles electrical appliances of all kinds except ranges. The manager of this store is a skilled merchandiser and is doing an increasing business in his electrical de-

partment. His chief criticism regarding the appliance business was that he was hard pressed to compete with the low terms on the heavier appliances offered by the central station.

One hardware store was handling a cheap line of appliances. This establishment started out several years ago as an exclusive hardware store and gradually branched into the wiring and appliance business. However, the volume of appliances sold is small in comparison to the volume of hardware. Two furniture stores are selling washing machines and vacuum cleaners. Both are doing a fair business and one announced the intention of taking on a new line of washers, and, by campaigning, to double his washing machine business. The proprietor of the other expressed the opinion that the furniture store is not the proper outlet to handle the smaller appliances.

The central station leads in volume with 38 per cent of the total for the city. The department store is doing 31.3 per cent of the business, the two furniture stores 24.7 and the hardware store the balance.

Department Store Heads Dealers in City IV

The rapidity and apparent ease with which a non-electrical merchandiser can dominate the field in

CITY II

	Washing Machines	Vacuum Cleaners	Flatirons	Curling Irons	Toasters	Percolators	Total Sales Each Class of Store	Per Cent of Total for City
Hardware Stores								
Store "A".....	35	.....	60	12	12	25		
Value.....	\$4,375	.....	\$360	\$24	\$72	\$300	\$5,131	17.4
Per Cent of Appliance Sales.....	85.3	.....	7.0	0.5	1.4	5.8		
Contractor-Dealers								
Store "B".....	2	4	60	72	12	6		
Store "C".....	35	50	200	500	140	75		
Total.....	37	54	260	572	152	81		
Value.....	\$4,625	\$2,835	\$1,560	\$1,144	\$912	\$972	\$12,048	40.7
Per Cent of Appliance Sales.....	38.4	23.5	13.0	9.5	7.5	8.1		
Furniture Stores								
Store "D".....	6	4	.....	.....	.....	.....
Value.....	\$750	\$210	.....	.....	.....	.....	\$960	3.2
Per Cent of Appliance Sales.....	78.1	21.9	.....	.....	.....	.....
Central Station								
Value.....	70	20	150	40	36	40		
Value.....	\$8,750	\$1,010	\$900	\$80	\$216	\$480	\$11,436	38.7
Per Cent of Appliance Sales.....	76.5	8.8	7.9	0.7	1.9	4.2		
Grand Total								
All Dealers.....	148	78	470	624	200	146		
Value.....	\$18,500	\$4,035	\$2,820	\$1,248	\$1,200	\$1,752	\$29,575	100.0
Per Cent of Total Sales.....	62.6	13.7	9.5	4.2	4.1	5.9		

CITY III

	Washing Machines	Vacuum Cleaners	Flat- irons	Curling Irons	Toasters	Perco- lators	Total Sales Each Class of Store	Per Cent of Total for City
Contractor-Dealer								
Store "A".....			100	36	6			
Value.....			\$600	\$72	\$36		\$708	1.2
Per Cent of Appliance Sales.....			84.7	10.2	5.1			
Hardware Stores								
Store "B".....	12	10	72	100	12	6		
Value.....	\$1,500	\$525	\$432	\$200	\$72	\$72	\$2,801	4.8
Per Cent of Appliance Sales.....	53.5	18.7	15.4	7.2	2.6	2.6		
Department Stores								
Store "C".....	120	48	60	48	48	12		
Value.....	\$15,000	\$2,520	\$360	\$96	\$288	\$144	\$18,408	31.3
Per Cent of Appliance Sales.....	81.5	13.7	1.9	0.5	1.6	0.8		
Furniture Stores								
Store "D".....	40	60						
Store "E".....	50	4						
Total.....	90	64						
Value.....	\$11,250	\$3,360					\$14,610	24.7
Per Cent of Appliance Sales.....	77.0	33.0						
Central Station								
Value.....	152	28	246	79	30	4		
Per Cent of Appliance Sales.....	\$19,000	\$1,470	\$1,476	\$158	\$180	\$48	\$22,332	38.0
	85.1	6.6	6.6	0.7	0.8	0.2		
Grand Total								
All Dealers.....	374	150	478	265	96	22		
Value.....	\$46,750	\$7,875	\$2,868	\$526	\$576	\$264	\$58,859	100.0
Per Cent of Total Sales.....	79.4	13.4	4.9	0.9	1.0	0.4		

*Going out of business.

a short period of time has been forcibly demonstrated in the case of City IV, a town of 3,200 population in California where a department store is doing 58.5 per cent of the business at the present time. Three years ago electrical appliances were carried merely as a convenience to the patrons of the house. Today an electrical department is an important part of the store. The increase in volume of sales has been 50 per cent a year while the two competing electrical contractor-dealers have been either just holding their own or showing but a slight increase above normal growth.

Of the two electrical contractor-dealers one was found to be an enterprising business man with a well appearing store and a firm hold on the major portion of the wiring contracting and of the appliance business as between the two electrical dealers.

Apparently lack of service and attention to electric range customers on the part of the municipal distribution system is responsible for the fact that there are 30 per cent less ranges in service at the present time than there were when the system was taken over from the private utility three years ago, this in spite of the fact that a special rate is offered for cooking and heating. The municipal plant does not sell appliances.

The town is the distributing center for a large agricultural and mining region and general business conditions are fair.

Hardware Dealers versus Lone Contractor-Dealer in City V

One lone electrical contractor-dealer in City V is making a determined stand against the inroads of two hardware stores which are doing 62.6 per cent of the appliance business. In an effort to maintain his store in the town's shopping center he has added a line of bicycles and phonographs, both of which are important factors in his annual gross volume of business.

One of the two hardware stores is not actively pushing appliances but the other is alive to the possibilities of this class of merchandise and in addition to maintaining a well stocked electrical department has recently entered the contracting field also. The merchandising instinct of the hardware merchant has shown this dealer the potential business in radio in small towns and rural districts and has resulted in the establishment in his store of the only radio department in town. Although the electrical dealer would seem the logical outlet for radio equipment, and in this particular case he already has a grip on

CITY IV

	Washing Machines	Vacuum Cleaners	Flat- irons	Curling Irons	Toasters	Perco- lators	Small Heaters	Waffle Irons	Total Sales Each Class of Store	Per Cent of Total for City
Contractor-Dealers										
Store "A".....	6	10	60	250	20	20	40	18		
Store "B".....	4	2	20	50	5	5	10	6		
Total.....	10	12	80	300	25	25	50	24		
Value.....	\$1,250	\$630	\$480	\$600	\$150	\$300	\$450	\$360	\$4,220	41.5
Per Cent of Appliance Sales.....	29.6	14.9	11.4	14.2	3.6	7.1	10.6	8.5		
Department Stores										
Store "C".....	10	60	50	50	30	30	30	24		
Value.....	\$1,250	\$3,150	\$300	\$100	\$180	\$360	\$270	\$360	\$5,970	58.5
Per Cent of Appliance Sales.....	21.0	52.8	5.0	1.7	3.0	6.0	4.5	6.0		
Grand Total										
All Dealers.....	20	72	130	350	55	55	80	48		
Value.....	\$2,500	\$3,780	\$780	\$700	\$330	\$660	\$720	\$720	\$10,190	100.0
Per Cent of Total Sales.....	24.5	37.1	7.6	6.9	3.2	6.5	7.1	7.1		

CITY V

	Washing Machines	Vacuum Cleaners	Flat- irons	Curling Irons	Toasters	Perco- lators	Small Heaters	Waffle Irons	Total Sales Each Class of Store	Per Cent of Total for City
Hardware Stores										
Store "A".....	20	2	25	50	48	36	18	12		
Store "B".....		2	15	25	12	6	5	6		
Total.....	20	4	40	75	60	42	23	18		
Value.....	\$2,500	\$210	\$240	\$150	\$360	\$504	\$207	\$270	\$4,441	62.6
Per Cent of Appliance Sales.....	56.2	4.7	5.4	3.4	8.1	11.3	4.7	6.2		
Contractor-Dealers										
Store "C".....	10	8	50	50	24	10	15	12		
Value.....	\$1,250	\$420	\$300	\$100	\$144	\$120	\$135	\$180	\$2,649	37.4
Per Cent of Appliance Sales.....	47.2	15.8	11.3	3.8	5.4	4.5	5.1	6.6		
Grand Total										
All Dealers.....	30	12	90	125	84	52	38	30		
Value.....	\$3,750	\$630	\$540	\$250	\$504	\$624	\$342	\$450	\$7,090	100.0
Per Cent of Total Sales.....	53.0	8.9	7.6	3.5	7.1	8.8	4.8	6.3		

one of radio's most recent allies, the phonograph trade, the contractor-dealer evidenced no interest in the radio business.

Although not in the merchandising business the central station is actively promoting electric cookery and 35 electric ranges were sold in the district last year.

Notwithstanding the fact that this city and City IV, previously described, are almost identical in size there was 30 per cent less appliances sold in the latter. This, however, is undoubtedly due to the lack of interest of the general buying public in appliances rather than the inadequacy of the retail outlets.

Electrical Dealers Do 98 Per Cent of Business in City VI

The bulk of the appliance business is being handled by the electrical dealers in City VI where 98 per cent of the appliances are sold by one specialty shop and three contractor-dealers. The only non-electrical outlets in the city are two hardware stores which do 1.7 per cent of the business. But 0.3 of 1 per cent is done by the central station which displays appliances in its district offices and occasionally sells an appliance where a customer expresses a desire to purchase through the power company.

Seventy per cent of the washing machine and

vacuum cleaner business is being done by a well organized and well equipped specialty shop, one of a chain of such stores operating throughout this district. The small appliances are carried more as a convenience for the customers of the shop, as a result of which the contractor-dealers are doing the bulk of this class of business. The success of this dealer may be partially attributed to the fact that he recognizes the value of advertising and maintains a large house-to-house sales organization.

One of the three contractor-dealers is a wide-awake merchant and is constructing a new store which will be the equal of anything in the state. His appliance business has been increasing at the rate of 25 per cent a year and as a result of his new store he expects to gain a firmer hold of the business. The remaining two contractor-dealers were ordinary.

Neither of the two hardware stores is actively concerned with the appliance business. Appliances are carried as a convenience for regular customers.

City VI with its 20,000 population is in the center of a rich agricultural district in California. It is growing rapidly.

Wide Variety of Retail Outlets in City VII

The large number and wide variety of retail outlets for electrical merchandise in City VII are apparently responsible for the high per-capita sales in

CITY VI

	Washing Machines	Vacuum Cleaners	Flat- irons	Curling Irons	Toasters	Perco- lators	Waffle Irons	Heaters	Total Sales Each Class of Store	Per Cent of Total for City
Hardware Stores										
Store "A".....			50	100	12	6	12	4		
Store "B".....			50	75	10	5	10	.....	
Total.....			100	175	22	11	22	4		
Value.....			\$600	\$350	\$132	\$132	\$330	\$27	\$1,571	1.7
Per Cent of Appliance Sales.....			38.3	22.2	8.4	8.4	21.0	1.7		
Contractor-Dealers										
Store "C".....	20	80	125	200	40	24	24	18		
Store "D".....	50	15	350	175	25	15	10	20		
Store "E".....	60	60	250	250	70	24	24	50		
Total.....	130	155	725	625	135	63	58	88		
Value.....	\$16,250	\$8,140	\$4,350	\$1,250	\$810	\$756	\$870	\$792	\$33,218	35.1
Per Cent of Appliance Sales.....	48.9	24.5	13.1	3.8	2.4	2.3	2.6	2.4		
Specialty Shops										
Store "F".....	325	340	100	100	24	10	10	.....	
Value.....	\$40,650	\$17,850	\$600	\$200	\$144	\$120	\$150	.....	\$59,714	62.9
Per Cent of Appliance Sales.....	68.2	29.9	1.0	0.3	0.2	0.2	0.2	.....	
Central Station										
Value.....			25	.....	6	5	5	.....	\$321	0.3
Per Cent of Appliance Sales.....			46.7	.....	11.2	18.7	23.4	.....	
Grand Totals										
All Dealers.....	455	495	950	900	187	89	95	92		
Value.....	\$56,900	\$25,990	\$5,700	\$1,800	\$1,122	\$1,068	\$1,425	\$819	\$94,824	100.0
Per Cent of Appliance Sales.....	60.0	27.4	6.0	1.9	1.2	1.1	1.5	0.9		

this city as compared with others included in this survey. A hardware store, three contractor-dealers, a household furnishing store and a specialty shop sell the bulk of appliances, while a furniture store and a farm implement store sell washing machines and vacuum cleaners.

The specialty shop, one of a chain operating in this section, is doing 45 per cent of the appliance business, chiefly in washing machines and vacuum cleaners. The smaller appliances are carried for the convenience of the patrons of the store but are not aggressively merchandised. The small appliance business is about evenly divided between three contractor-dealers and the household furnishing store, the former doing 23.1 per cent of the city's total and the latter 21.8 per cent. Because of a wide-

ment stores handle washing machines and vacuum cleaners merely as a convenience to their patrons.

The municipal utility supplying the city displays appliances in its offices which are far removed from the retail shopping center of the city and occasionally sells one of the heating devices. The city's policy in the free renewal of lamps has completely demoralized the lamp business in the community. Electric range business has not been flourishing because of the high cooking rates charged by the city.

City VII has a population of 25,000 and is in the center of a rich agricultural and poultry raising region.

Summary

Many interesting side lights and comments were brought out during the course of the surveys. As

CITY VII										
	Washing Machines	Vacuum Cleaners	Flatirons	Curling Irons	Toasters	Perco- lators	Waffle Irons	Heaters	Total Sales Each Class of Store	Per Cent of Total for City
Hardware Stores										
Store "A".....	35	25	150	200	75	50	10	25	\$8,412	6.4
Value.....	\$4,375	\$1,312	\$900	\$400	\$450	\$600	\$150	\$225		
Per Cent of Appliance Sales.....	52.0	15.6	10.7	4.8	5.4	7.1	1.7	2.7		
Contractor-Dealers										
Store "B".....	120	100	300	350	120	120	60	150	\$30,626	23.1
Store "C".....	10	5	50	100	12	12	10	15		
Store "D".....	2	1	25	75	10	10	5	10		
Total.....	132	106	375	525	142	142	75	175		
Value.....	\$16,500	\$5,570	\$2,250	\$1,050	\$852	\$1,704	\$1,125	\$1,575		
Per Cent of Appliance Sales.....	53.8	18.2	7.3	3.4	2.8	5.6	3.7	5.2		
Household Furnishings										
Store "E".....	100	150	500	600	150	125	75	100	\$29,005	21.8
Value.....	\$12,500	\$7,880	\$3,000	\$1,200	\$900	\$1,500	\$1,125	\$900		
Per Cent of Appliance Sales.....	43.1	27.2	10.3	4.1	3.1	5.2	3.9	3.1		
Furniture Stores										
Store "F".....	10	20	.....	.....	.....	.....	.....	.....	\$2,300	1.8
Value.....	\$1,250	\$1,050	.....	.....	.....	.....	.....	.....
Per Cent of Appliance Sales.....	54.4	45.6	.....	.....	.....	.....	.....	.....
Farm Implements										
Store "G".....	12	2	.....	.....	.....	.....	.....	.....	\$1,605	1.3
Value.....	\$1,500	\$105	.....	.....	.....	.....	.....	.....
Per Cent of Appliance Sales.....	93.5	6.5	.....	.....	.....	.....	.....	.....
Specialty Shops										
Store "H".....	340	300	100	100	25	12	13	.....	\$59,524	45.0
Value.....	\$42,500	\$15,750	\$600	\$200	\$150	\$144	\$180	.....	
Per Cent of Appliance Sales.....	71.5	26.5	1.0	0.3	0.2	0.2	0.3	.....	
Central Station*										
.....	.....	.....	50	50	12	12	5	10	\$781	0.6
Value.....	.....	.....	\$300	\$100	\$72	\$144	\$75	\$90		
Per Cent of Appliance Sales.....	.....	.....	38.4	12.8	9.2	18.4	9.6	11.6		
Grand Totals										
All Dealers.....	629	603	1,175	1,475	404	341	177	310	\$132,253	100.0
Value.....	\$78,625	\$31,667	\$7,050	\$2,950	\$2,424	\$4,092	\$2,655	\$2,790		
Per Cent of Total Sales.....	59.6	23.9	5.3	2.2	1.8	3.1	2.0	2.1		
*Municipal Distribution System.										

awake merchandising policy and the important position which this household furnishing store occupies among local retail merchants it is becoming an increasingly important factor in the sale of electrical appliances. Out of an annual gross volume of business running into hundreds of thousands of dollars this merchant spends between 2½ and 3 per cent for advertising.

As was the case in City VI, one contractor-dealer stands head and shoulders above his competitors. This dealer has displayed a marked merchandising ability in that he has recognized the necessity for adding certain non-electrical lines to attract the women shoppers to his store, especially during the holidays. This dealer carries gas ranges, refrigerators, kitchen cabinets, and art gifts, in all of which he is showing a nice profit.

The one hardware store handling appliances is doing 6.4 per cent of the business and has a well stocked department. The furniture and farm imple-

ment stores handle washing machines and vacuum cleaners merely as a convenience to their patrons.

The municipal utility supplying the city displays appliances in its offices which are far removed from the retail shopping center of the city and occasionally sells one of the heating devices. The city's policy in the free renewal of lamps has completely demoralized the lamp business in the community. Electric range business has not been flourishing because of the high cooking rates charged by the city.

City VII has a population of 25,000 and is in the center of a rich agricultural and poultry raising region.

Summary

Many interesting side lights and comments were brought out during the course of the surveys. As

might have been anticipated, the questions of margin and price came in for their full share of discussion. The majority of appliances carry margins ranging from 25 to 35 per cent with 30 per cent as the average. It was stated that this is adequate for the contractor-dealer but in the case of hardware, house-furnishing and department stores, this margin is not sufficient. More criticisms were forthcoming from the electrical dealers than the non-electrical on this score, despite the fact that the electrical dealers' overhead is from 10 to 15 per cent lower than their non-electrical competitors'. Several hardware dealers remarked upon this fact and stated that there must be a revision in discounts before they would engage more actively in appliance sales.

The proprietor of one large house-furnishing-goods store which does a gross volume of business of \$300,000, 10 per cent of which is done by the electrical department, criticized the jobber's price lists. He could not understand why he must pay a higher

price for appliances in lots of 6 than in lots of 100, especially when he did business on a cash basis and was one of the largest outlets for appliances in his city. He made a plea for a unit-price basis of purchasing in the case of well established firms such as his own.

Electrical dealers in small towns which were wholesale distributing centers for the districts in which they were located, felt that the practice of allowing hardware or department stores in such cities jobbing prices because they acted as distributors was unfair. One dealer stated that his chief competitor, a hardware store, was able to sell appliances as cheaply as the dealer could purchase them from his jobber.

The question of servicing appliances is not as important as some manufacturers and jobbers have believed. Non-electrical outlets which sell a large volume of appliances have either installed servicing departments of their own or have made arrangements with the manufacturer's service stations in nearby large cities to service appliances for them. The plea that contractor-dealers must exist if for no other reason than to service appliances was denied. While non-electrical outlets may not have performed this task as readily as they should have in the past, they are awakening to its importance and are taking steps to remedy this weakness.

From the standpoint of the jobber the survey brought forth some important comments. The same men who criticized the jobbers' discounts made the statement that in the past the jobbers, in their zeal to get new business or to enter communities where they had no distribution, have been prone to grant too liberal credit to dealers desiring to enter business. When these dealers failed, as they have in many instances, they stated that the appliance selling situation in that particular community was disrupted for months.

The proprietor of a hardware store which was doing the greatest portion of appliance business in one community stated that the electrical jobbers must improve their service if they expect to hold the trade of such establishments as his. Where a hardware salesman calls upon him once or twice a week, the electrical jobber's salesman made but one call in four or six weeks. This dealer believes that if the electrical jobber is to get and to hold the business of the non-electrical outlets he must make his service so valuable that the non-electrical dealer will prefer to do business with him.

In localities where the central station is merchandising the bulk of the appliance business is still passing through electrical channels. This also holds in those cities where the central station was not merchandising but where there was a specialty shop which was setting the pace as the central station might have been doing. There was little criticism against central station advertising. In one city where the power company had announced its intention of merchandising and had then been forced to curtail its efforts because of a power shortage the dealers were almost unanimous in their belief that they would profit from the increased public interest in applian-

ces due to the merchandising efforts of the power company. Most of the criticisms against central station merchandising came from the contractor-dealers.

The dealers in two southern California cities reported that the power shortage has had little effect on appliance sales.

The practice of purchasing appliances wholesale for employees indulged in by some power companies aroused a great amount of criticism. One dealer stated that the practice had been extended until the purchasing department of this particular company was buying furniture and automobile tires at wholesale prices for its employees and even for their friends.

Of interest to the manufacturer of appliances was the crying need expressed by many of the merchants for medium priced, reliable, guaranteed lines. One merchant stated that the grades of appliances on the market today could be classed as standard, sub-standard and inferior. The inferior grade will not last long in his belief because the public will not accept inferior articles. The prices on the standard lines are still too high, he stated, and the manufacturers who have recognized this and are bringing out the lines he classed as sub-standard are reaping the harvest.

The contractor-dealers who were making a success in the cities surveyed are those who have realized that electrical appliances alone are not sufficient to maintain a store in a downtown shopping area. One dealer had successfully added a line of phonographs and was showing a nice profit on them. Another had added gas ranges, refrigerators, kitchen cabinets and a line of art gifts especially attractive to the woman shopper. His volume of appliances had doubled since this step was taken, he stated.

The opinion was prevalent especially among the non-electrical outlets that the contractor-dealer is becoming a decreasingly important factor in the distribution of appliances. It was admitted that he was necessary; that he would always exist because wiring must be done and fixtures must be sold; that he would carry a line of appliances for the convenience of his wiring and fixture customers; but that he would not continue to sell the volume of appliances that he had in the past.

Conclusion

It is apparent from even a cursory examination of these surveys that the distribution of electrical appliances is in a highly transitory state. A natural upheaval is taking place, just as it has in the distribution of other lines of merchandise, and signs point to the fact that upon the conclusion of the present period of transition, appliance distribution will be upon a more stable plane with electrical merchandise reaching the consuming public through those channels which have the proper merchandising ability and experience. The central station will still continue to merchandise those lines which require pioneering; the contractor-dealer will have an important place in the picture; but the bulk of appliance selling will be done by the outlets which today are merely "breaking in."

The Value of an Outlet to the Electrical Industry

By E. W. Day

Industrial Engineer, San Francisco, Calif.

VITAL statistics tell us the number of persons in each thousand of population who die each year, the number who will die next year and the various causes of their death. In spite of the uncertain life tenure of the policy holders, here is a business that has been practically reduced to an exact science.

In the past decade business men have been learning that volume of sales as between any given periods of time is not necessarily indicative of the progress or lack of progress made. For example, if some one tells us that his business has increased 10 per cent over that of the previous year it does not necessarily imply a definite progress. If the statement is qualified by the additional observation that this increase was made in the face of a 10 per cent decline of business in general we are then able to draw a sound conclusion as to the relative progress made. However, a 10 per cent decline in the volume of a particular business in relation to a 30 per cent decline in general business activity is relatively as favorable a performance as the one previously cited.

To determine the progress of an industry, or that of any individual retailer, wholesaler, or manufacturer in that industry, it is equally necessary to establish some unit of measure. This unit is difficult to determine in the case of some industries and comparatively easy in others, but in all cases it is first necessary to develop all the available facts and to reduce them into an expressible, definite, constant and adaptable unit.

The Outlet the Unit of Measurement

In the case of the electrical industry the unit is obvious—it is the outlet. Every outlet installed represents a definite and cumulative value to all factors of the industry; to the contractor-dealer, to the jobber, to the manufacturer and to the power company. While this is obvious the statement is too general satisfactorily to visualize just what influence each electrical outlet has in determining the scope of the electrical market, whether that market be national, divisional or local. Naturally, it will be conceded without argument that a complete electrical installation as compared with one which meets only minimum lighting and service requirements adds materially to the present and potential income of the various factors of the industry. The power com-

THE initial return from one outlet added to a single installation amounts to very little. When the returns from one outlet added to over three hundred thousand installations are considered over a five-year period the results are staggering. In this article Mr. Day, after giving careful attention to the many contributing factors, has pictured what the outlet means in dollars and cents to the entire industry.

pany benefits by a larger monthly income from a complete installation and the contractor-dealer profits by reason of immediate and future appliance sales which in turn are transmitted to the jobber and to the manufacturer. But approximately what money value does each outlet represent to the industry and to the component elements of the industry?

For the analysis of the outlet we shall take the

Pacific Coast—the states of California, Oregon, and Washington. This selection is made (1) because the conditions surrounding electrical consumption on the Coast vary considerably from those found in other parts of the United States and (2) because by limiting the area covered by the analysis a more specific conception of relative values may be secured.

Now to marshal the facts—but before entering upon that analysis let us agree as to what is a fact. We are inclined to consider a fact as a constant and definite quantity such as twice two are four. But what we consider facts are such only in combination with variable facts and near facts. There is probably no such thing in business as a 100 per cent fact. But this by no means suggests that the use of information which is not mathematically exact is neither useful nor safe. Business is primarily concerned with relationships as opposed to differences. All standards of measurement are purely arbitrary and are established by the government, the state, the municipality or by common usage and consent. The yard stick is therefore nothing more than a purely arbitrary unit of measure. Should you decide to consider 27 in. as a yard and upon that basis compare the length of your desk with that of your shop you would find the relationship between the two to be the same as though you had used the accepted standard of 36 in.

It is immaterial therefore whether or not the results developed by this analysis are 10 per cent plus or 10 per cent minus in terms of 100 per cent accuracy—the fact that we are establishing a yard stick for the electrical industry coupled with the fact that neither the Journal of Electricity nor the writer are attempting to prove a predetermined premise by the manipulation of figures is sufficient basis for assuming a reasonable approximation to true relative values.

Basis for Analysis Defined

The basis, of course, for the analysis of outlets must be predicated upon an actual study of electrical installations over a period of time sufficiently prolonged actually to establish the trend of performance. In addition the analysis must be based upon the individual performance of two distinct groups of contractors. For lack of a better definition these two groups may be classified as "qualified" contractors and "casual" contractors.

In explaining this segregation it seems desirable to add that averages, unless they are typical, are deceiving and therefore dangerous as a basis for drawing conclusions. While the average of 25 and 75 is 50 there is certainly nothing in the average indicated to convey a conception of the range of variation involved. On the other hand, if this same figure 50 represents the average of 48 and 52 we may say that the average figure is typical. Thus, while the general average of performance on the part of all electrical contractors may indeed develop a so-called average of performance, it is desirable further to examine the figures in order to arrive at typical averages.

In every business there are always two broad classifications of individuals or concerns involved. One group comprises those who are financially responsible, whose investment in merchandise is in an accepted ratio to their volume of sales and who deliver standard merchandise at a fair profit. The other group is made up of those of limited or no financial status who have been drawn into the particular business either by reason of economically favorable circumstances or out of the necessity of making a livelihood at a trade with which they are familiar.

What Happens When the Standard Falls

In the case of the electrical industry on the Pacific Coast the general depression of 1921 led many electricians who were out of employment to start out for themselves. Their sole basis of operation was from the standpoint of price. Having secured a contract on this basis it was reasonable to expect them to seek every means to keep down installation costs, and since each outlet installed on any one of their jobs involved a definite expense on their part the purpose was to bid on the lowest possible number of outlets.

In Table I is shown the effect of bids based upon price alone on the average number of outlets installed per job in 1921 as against 1920 in a large Pacific Coast city, and the subsequent increase in outlets per job brought about by educational measures directed at both the public and the trade by those who represent the highest standards of sound electrical merchandising.

It will be noted that the combined annual average of outlets installed per job declined from $13\frac{1}{2}$ in 1920 to $11\frac{1}{2}$ in 1921. Also note the consistent gain which has been made in the averages of both groups since 1921. What the loss of two outlets in each job installed on the Pacific Coast during a year's time meant to the various factors of the industry can be estimated from figures given later

on in this article. This loss amounted to a staggering total.

But we are considerably more interested in figuring positive rather than negative problems. We cannot retrieve the past but we can look to the future. It seems obvious that if we can determine within reasonable limitations what the loss of an outlet on a job means to each of us individually and to the industry in general we shall be able to visualize much more accurately its importance than would be the case were aggregate figures to be discussed.

TABLE I
RECORD OF OUTLETS INSTALLED PER JOB

	Qualified Group	Casual Group	Average
1920			
Jan.....	14.4	13.1	13.9
Feb.....	13.1	13.1	13.1
Mar.....	13.3	12.4	13.1
Apr.....	12.3	9.6	11.3
May.....	17.8	11.1	15.8
June.....	13.1	16.8	14.5
July.....	14.5	10.9	14.5
Aug.....	13.5	14.6	14.1
Sept.....	13.8	13.4	14.6
Oct.....	14.2	13.9	14.1
Nov.....	13.2	13.7	14.4
Dec.....	15.1	10.8	12.8
1920 Average....	14.1	12.8	13.5
1921			
Jan.....	10.2	7.6	8.5
Feb.....	11.1	6.8	8.2
Mar.....	15.9	8.3	10.8
Apr.....	20.7	8.7	12.4
May.....	12.3	8.1	9.4
June.....	15.7	9.7	11.3
July.....	21.1	10.6	13.2
Aug.....	21.1	9.5	12.2
Sept.....	13.6	7.9	9.1
Oct.....	17.9	8.1	10.1
Nov.....	16.2	18.4	17.4
Dec.....	14.7	10.6	12.6
1921 Average....	15.6	9.6	11.5
1922			
Jan.....	14.1	9.1	11.5
Feb.....	14.8	10.5	12.6
Mar.....	16.4	10.7	13.5
Apr.....	16.1	13.1	14.5
May.....	20.1	11.2	14.9
June.....	22.7	9.1	15.1
July.....	18.1	12.1	14.7
Aug.....	20.6	13.3	16.5
Sept.....	15.6	13.9	14.7
Oct.....	15.6	11.1	13.1
Nov.....	16.2	13.1	14.6
Dec.....	17.5	13.2	15.2
1922 Average....	17.1	11.7	14.2
1923			
Jan.....	21.1	12.4	16.1
Feb.....	19.1	13.5	16.1
Mar.....	21.9	14.5	17.8
Apr.....	21.2	14.1	17.3
May.....	18.7	14.4	16.4
June.....	22.2	16.9	19.4
July.....	20.7	14.2	17.3
Aug.....	17.9	16.6	16.7
Sept.....	17.2	14.6	16.7
Oct.....	15.4	12.2	13.6
Nov.....	15.5	12.4	13.9
Dec.....	20.1	15.3	17.5
1923 Average....	19.4	14.5	16.8
1924			
Jan.....	20.3	13.4	16.5
Feb.....	17.6	14.4	15.7
Mar.....	18.9	14.8	16.4
Apr.....	21.3	14.9	17.7
May.....	23.4	14.9	18.7
June.....	18.4	13.7	15.8
6 Mos. 1924, Avg. 20.1	20.1	14.4	16.8

To intimate to an electrical contractor-dealer that his failure to make complete installations in every instance, coupled with a like failure on the part of his contractor-dealer brothers, has cost the industry as a whole a certain number of millions of dollars in a certain period is too general a statement to carry much weight. The contractor-dealer who is doing a business of ten, twenty-five or even a hundred thousand dollars cannot interpret his relative importance in the industry when we start to deal with millions. When we are prepared to say to an individual con-

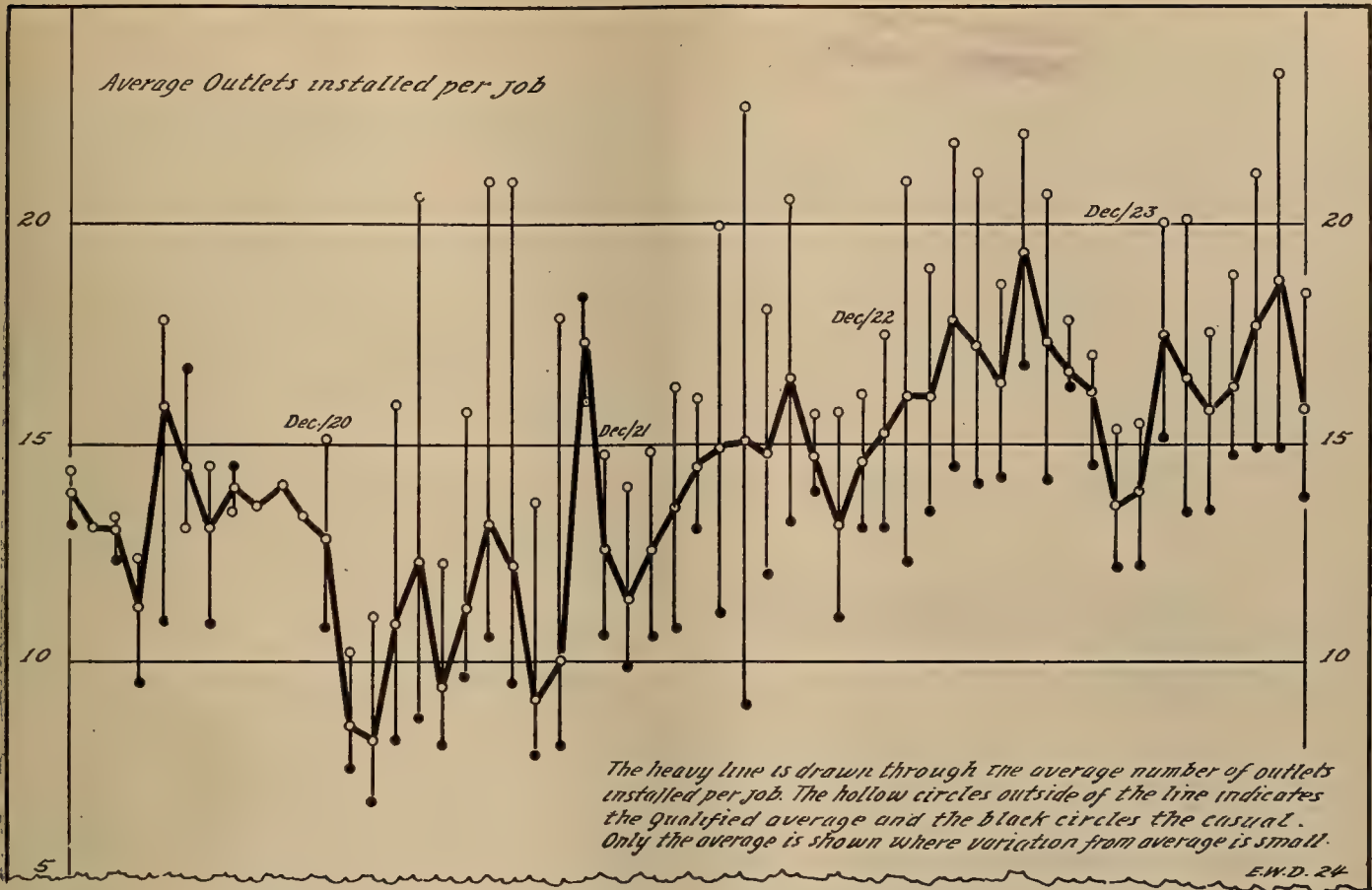


Fig. 1 showing average outlets installed per job based on analysis of 174,756 installations.

tractor, however, that every outlet which he installs represents a minimum income of so many dollars and cents to himself as well as to the industry in general, we are making a statement which is susceptible of specific application. A contractor-dealer who, for example, has installed a hundred jobs in the course of a year will unconsciously visualize how much greater his profits would have been had he been able to add an average of two, three or four outlets to each of those jobs.

To establish the approximate value of an outlet, it was necessary to develop some reasonably sound premise as a starting point. Thus the original computation was based upon two sets of figures.

The Starting Point in the Computation

The first set of figures has to do with the average cost of wiring homes and the average purchase of appliances per wired home, the wiring estimates covering the retail cost of wiring and fixtures and excluding labor cost. The figures were gathered in a comprehensive survey made by the Electrical World shortly before the value of an outlet was originally established and were secured from a study of the records of twenty-five representative light and power companies. At the same time a detailed study was made of appliance sales by manufacturers. Naturally price trends had to be reckoned with, since any estimates based upon the 1921-22 price levels would serve to exaggerate the final estimates. The estimates arrived at are as follows, it having been assumed upon due investigation that old customers—that is, those whose homes were not wired during

the current year—will purchase appliances to two-thirds of the value of appliances purchased by new electric lighting customers during the course of the year:

Year	New Customer Wiring and Fixtures	Appliances	
		New Customer	Old Customer
1924	68.30	\$17.30	\$11.53
1925	64.90	16.40	10.53
1926	61.60	15.60	10.40
1921	82.00	20.30	13.52

The second set of figures comprising the original basis of computation is not an estimate but covers actual operating figures taken from the records of the public service corporations. These statistics have to do with the average annual kw-hr. consumption of electricity by 270,839 dwelling and commercial lighting customers. The average kw-hr. annual consumption came to 478 while the average annual lighting bill was \$34.

With these facts as a basis—and they are called facts since they represent a combination of actual operating records and the best of technical opinion available—the value of the outlet can be established within reasonable limitations. However, before any actual computations are made it will be necessary to examine various contributing and qualifying factors in order that any possible exaggeration of values may be forestalled.

Other Factors Taken Into Consideration

First comes the question as to the time factor in arriving at the approximate value of the outlet.

To estimate this value for the period of one year would not present a true picture of the outlet-value to the various elements of the industry since the contractor-dealer naturally secures the bulk of his profit at the time of installation, while the power company continues to receive an approximately constant return from the installation year after year. In order to equalize this feature, a period of five years has been selected. Some might select a three-year or a seven-year period. Such selections would, of course, alter the income relationships. The fact remains, however, that some arbitrary unit of time must be assumed and the five-year period seems as logical as any other one.

While electrical statistics as regards dwelling installations are sufficiently complete to lend themselves to sound conclusions, the statistics of indus-

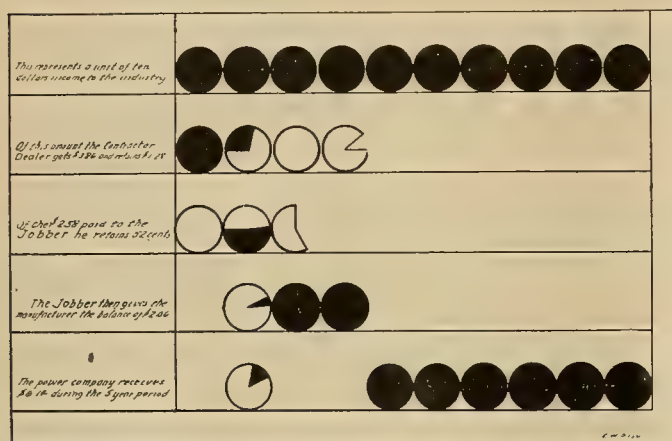


Fig. 2 showing distribution of each ten dollars of gross income to the various factors of the electrical industry.

trial installations are principally in terms of installed motor horsepower and are therefore not susceptible to interpretation into terms of outlets. Figures covering commercial lighting installations are entirely lacking so far as practical purposes are concerned.

It is presumable, of course, that the unit cost of wiring and equipment per outlet in the average industrial installation runs considerably in excess of the unit cost for wiring and fixtures in dwelling installations. In round numbers, however, there are only about one hundred thousand industrial power customers on the Pacific Coast while there are considerably over a million residential lighting customers, so that the relative importance of the industrial installation is less than ten to one. It may also be assumed that the unit cost per outlet in commercial installations does not exceed that of domestic installations by any considerable extent, which fact serves to cut down the relative importance of the industrial installation to probably as small as one to twenty. Since we are seeking to establish a conservative value for the outlet, the industrial phase of the problem does not particularly affect the final figures. Those contractors who are doing both residential and industrial work and who may be interested in arriving at the relative installation costs and profit per outlet can readily establish the relative profit-weight of the industrial outlet by using the

approximate value as established for the residential and commercial outlet.

With respect to the estimated power company income, it is not reasonable to assume that with an average annual income of \$34 and an average of 11½ outlets per installation that the resultant income of \$2.96 per outlet would increase in direct proportion to the number of outlets installed. Naturally, as between a completely wired and partly wired job, the power company would receive a larger annual income from the former but not necessarily a larger income per installed outlet. In addition, since the records show that the average number of outlets installed per job during 1921 was lower than in previous years, and since a large proportion of the consumers on the power company lines were old customers, we cannot properly assume that the average of installed outlets was only 11½. While the available records of outlets installed per job prior to 1921 do not show a higher annual average than 13½, we will assume in the interest of conservatism that these 270,839 lighting customers had an average of 14 outlets each. The annual revenue of the power companies per outlet will therefore be reduced to \$2.43.

The sum of \$68.30 per installation for wiring and fixtures has already been mentioned as the average dwelling estimate for 1924. In relation to appliances, however, we must assume that appliances will be sold for residential use rather than commercial use. While it is true that commercial lighting customers do use appliances of various types we cannot arbitrarily pro rate the appliance figures on a 100 per cent basis to all installations. The most reliable data available indicate that approximately 50 per cent of construction on the Pacific Coast, in terms of units of course, is in the erection of dwellings. No figures are available as to the use of appliances in commercial installations but those familiar with electrical development on the Coast seem generally to agree that if the relative importance of appliances is placed at 65 per cent no exaggeration will result. In other words, we first assume that no appliances are purchased by commercial customers. We next assume that 65 per cent instead of 50 per cent of all electrical installations are in dwellings. By basing our computation of appliance sales on the 65 per cent average rather than the 50 per cent figure the failure to include commercial customers as appliance purchasers is equalized. This is a much simpler method and equally as satisfactory as one that attempts to secure a separate analysis of commercial requirements for electrical appliances, since the latter process would be involved and would hold out no promise of greater accuracy.

Returns to Contractor-Dealer and Power Company

We are now in a position to set up the first series of figures, since we have examined both the contractor-dealer factor and the power company factor.

The appliance figures are calculated in this way: According to the estimated 1924 appliance purchases of new residential lighting customers, they will buy

Segregated Income from an Average Electrical Installation					
Wiring and Fixtures:					
Contractor-dealer	1924	1925	1926	1927	1928
Contractor-dealer	\$68.30				
Power Co. Income per job	\$34.00	\$34.00	\$34.00	\$34.00	\$34.00
Appliances:					
Contractor-dealer	11.24	6.95	6.76	6.76	6.76

appliances during this year which will average \$17.30. Using our factor of 65 per cent as just explained reduces this figure to \$11.24. The 1925 appliance estimate is \$10.53 and 65 per cent of that amount is \$6.95. The 1925 estimate is \$10.40 and 65 per cent is \$6.76. It is assumed that there will be no further downward trend in appliance prices subsequent to 1926 which would be sufficient to disturb the general average of 1926, so that the last two years are estimated as being constant in relation to 1926. Combining the value of wiring and fixtures with that of appliances we reach our first definite value of an average installation to the contractor-dealer and to the power company.

Total Income from an Average Electrical Installation						
	1924	1925	1926	1927	1928	Total
Cont.-dealer	\$79.54	\$ 6.95	\$ 6.76	\$ 6.76	\$ 6.76	\$106.77
Power Co.	34.00	34.00	34.00	34.00	34.00	170.00

Returns to Jobber and Manufacturer

The next step in the analysis is to determine what proportion of the \$106.77 received by the contractor-dealer goes to the jobber and in turn what amount the jobber turns over to the manufacturer.

weighted average, that is, giving each classification its proper weight as determined by its relative importance in terms of volume, it will work out something like this: If a contractor-dealer in a five-year period receives the sum of \$100 for wiring, fixtures and appliances in connection with a particular job (not including labor costs) the distribution will be approximately as follows:

Contractor-dealer receives	\$100.00
Pays the jobber	66.67
Contractor-dealer retains	\$33.33 or 33-1/3% of \$100
Jobber receives	66.67
Pays the manufacturer	53.34
Jobber retains	\$13.33 or 20%
Manufacturer receives	53.34

The Five-Year Value of an Outlet

Applying these differentials to our base table we secure the following distribution of income over a five-year period, the figures covering wiring, fixtures, and appliances on the average installation:

	Job	Per Outlet	
Contractor-dealer	\$106.77	\$7.63	\$7.63
Jobber	71.22	5.09	
Manufacturer	56.98	4.07	
Power Company	170.00	12.14	12.14
Value per outlet for five-year period, based on 14 outlets per job			
			\$19.77

It is interesting to note the effect of price variations upon the final value of the outlet. At the time this value was first established it was \$20.60 so the present figure represents a decline of a little over 4 per cent in less than two years. Based upon the estimated figures given the average five-year value of an outlet during the next few years should not decline below \$19.

Number of Outlets Has Increased

As has been shown, the number of outlets installed per job has increased from 14 to practically 17. This net gain of three outlets is not equal, however, to \$19.77 multiplied by 3 or \$59.31, since it cannot be arbitrarily assumed that each added outlet will yield the same return of \$2.43 to the power company. Conservative estimates indicate that if the five-year return to the power companies from a 14-outlet installation totals \$170 the return from a 17-outlet job would be approximately 16 per cent higher, or \$195 in round numbers, or \$11.47 per outlet over the five-year period. On this basis the gain to the industry as between a 14 and a 17-outlet job would be the difference between \$276.77 and \$324.71, or \$47.94 and not \$59.32 as would be the case were it assumed that the fixed ratio of income to the power companies would be \$12.14 irrespective of the increase in the number of outlets.

This sum of \$47.94 gain per job does not impress one greatly unless we seek to establish what this represents to the industry on the Coast. Building statistics covering the Pacific Coast are frag-

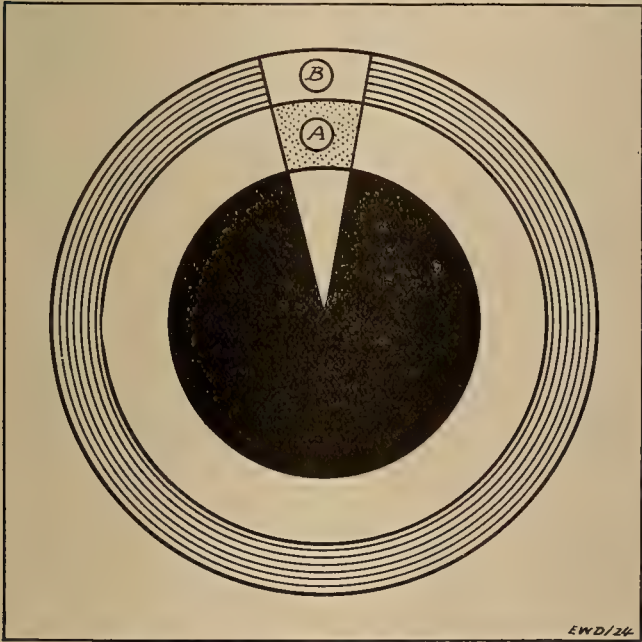


Fig. 3 showing effect on contractor-dealer's volume when electrical market is expanded. White sector shows volume when market is black circle, sector A shows potential sales when market is expanded to area of white circle. Further expansion would add volume B to potential sales.

This is not difficult to determine since the operating statistics of jobbers and manufacturers in general are, with few exceptions, no longer treasured secrets to be whispered behind barred doors. Naturally, the price differential varies with the different types of merchandise, but taking a

mentary excepting as applying to certain specific areas and none of the agencies that study and report periodically upon building activity in the United States have extended their reports to include the Coast. However, this fact need not prevent our reaching certain definite conclusions regarding building activity in the Pacific states.

Building Activity Must Be Considered

A casual glance at the fluctuation in general building activity in the United States in the past two decades will at once impress us as a typical example of the business cycle which we hear so much about. With the line of normal building activity established as a base, the fluctuations of activity above and below that line since 1905 practically equalized each other until the period of the war. Building operations then declined consistently to the point of practical stagnation. The phenomenal activity which later swept the country could have been predicted several years before it took place and estimates place building operations at from 15 to 35 per cent above normal for some years to come.

The index number of building activity for November, 1921, is placed at 100 (normal). While this index number applies to the country generally we must start from some basis and certainly no other is more acceptable. The number of building permits issued during the month of November, 1921, in various cities in California, Oregon and Washington totaled 9,856 and the population of those cities constituted 45 per cent of the total population of those states. Building permits are of course open to question on the score that the taking out of a permit does not necessarily imply actual construction but the volume of permits issued in a given period does indicate the trend of activity.

From a mathematical standpoint, if 9,856 permits represent 45 per cent of a given population (the actual figure is 44.85 per cent) then 21,975 permits represent 100 per cent. And if 21,975 represents the approximate number of permits issued on the Coast during November, 1921, the estimated number issued during previous and subsequent months can be approximately determined by using the government index numbers for those months. The application of these index numbers to the building permits is a purely mechanical process and need not be shown here. The results, however, indicate a total of 250,000 new buildings of various types planned and constructed during 1921, which implies at least 200,000 electrical installations. The use of 80 per cent as a measure of electrical jobs installed is low for a section where the use of electricity is general.

Carrying the analysis into 1922 the application of the index figures produces a total of 345,000 building permits, and applying the same 80 per cent for electrical installations, produces a total of 276,000.

Index numbers for 1923 carry the total of permits to over 475,000 or an average of nearly 40,000 monthly. This figure would represent a minimum of 380,000 electrical installations for the year. This is a conservative figure as estimates by those identified with the industry have placed the total of electrical

installations made on the Coast during 1922 as high as 400,000, or 45 per cent higher than the figures given here.

As is always the case with intense building activity, rising costs eventually lead to a withdrawal by the speculative builders with a consequent fluctuation in the number of permits issued. It is unnecessary, however, to attempt to trace the variations in building operations or to seek to establish any hypothetical conclusions as to what level future building operations will maintain above normal. We can be certain of at least one thing and that is that electrical installations on the Pacific Coast will total at least 380,000 annually for some time to come.

More Outlets and Increased Business

The difference between 380,000 electrical installations at an average of 14 outlets each (\$276.77) and the same number at an average of 17 outlets each (\$324.71) means an added income to the industry in three states alone of over eighteen million dollars in five years. And of this amount the contractor-dealer will have approximately six million dollars with which to carry his operating expenses and make his profit after settling his accounts with the jobber.

While the figures included in this discussion cannot be dignified by the term of "statistics" they were not manufactured to suit the occasion. On the contrary the conclusions reached are the results of over three years of continuous study and observation during which time a total of 174,756 individual electrical installations have been examined and recognized authorities consulted as to the approximate accuracy of the conclusions.

Value of the Outlet Goes Beyond the Present

The contractor-dealer should definitely bear one thing in mind. The value of the outlet goes beyond the immediate problem of contracts closed and net profit—which is of course essential for successful operation. But let each contractor remember that every time he is induced to make an electrical installation without providing a sufficient number of outlets to make possible, and readily possible, the convenient use of appliances, he is definitely restricting his market in the community. He may secure a certain contract by eliminating some of these essential outlets and secure a small and temporary profit. But when he does this he is jeopardizing his chance eventually to gain the larger profits accruing through the sale of various appliances which might be sold to this particular customer. It is conceivable that there is no certainty that the contractor who makes the original wiring installation will secure the appliance business of that particular customer, but the law of averages comes to his rescue. Take any community where the number of outlets is inadequate in the average installation and you will find a restricted market for appliances, wiring devices and fixtures. And a market of this nature when once choked by those whom it would support is not as easily expanded as the market for the average commercial commodity.

Selling More Merchandise Through Better Window Displays

By George L. Black

Field Electrical Company, San Bernardino, Calif.

BELIEVING that there is much more to the art of show window decoration than is commonly practiced, about two years ago I began to run a series of experimental window displays for the Field Electrical Company of San Bernardino, Calif. The results of the first twelve months of these experiments were published in the Feb. 15, 1923, issue of the Journal of Electricity and in the issue of July, 1923, of Electrical Merchandising. These experiments proved so successful that I have continued them up to the present date. Prior to these tests,

side of the street. This ratio at the end of the first twelve months' experiment was 2.6 to 1 in favor of the opposite side of the street and twenty-four months after the first of the new window displays was installed, the ratio was 1.5 to 1 in favor of the opposite side of the street. The next step was to make a check of the number of people that stopped to look at our windows. At the beginning of this experiment 16.2 per cent of those who passed stopped to look. The present average is 63.8 per cent. As a careful check showed that 85 per cent of those who stopped were women, an effort was made to build the displays to appeal to the housewife.

Adapting the Windows to the Display

When I started to change the character of our window displays I was confronted with the same problem that about 90 per cent of the dealers have; namely, the windows were not adaptable to merchandise varying in size from an immersion heater to an automatic range. It is this handicap that I have tried to overcome. My first move was to tear out the permanent background and floor of the window, and when this was done I extended the window ceiling back into the store a distance of 8 ft. from the glass line. The next step was to have a floor built in sections so that the size of the window could be varied. This floor is supported by saw horses, of which there are three sets of different heights to permit the elevation of the floor to suit the display.

When the floor is elevated above the base line of the plate glass, a velvet lined box is used under this floor with the open side facing the glass. This box runs the full width of the window and serves as a mask for the under side of the elevated floor and as a display case for small appliances. The box, which is lighted with tubular lamps controlled by an automatic effect machine, also may be used for producing optical illusions such as causing a coffee pot to change to a percolator. The floor is covered with sectional pieces of linoleum imitating hardwood. The advantage of this floor covering over genuine hardwood is that it enables the decorator to bore holes or drive nails in his floor for mechanical displays and when the linoleum is damaged it may be replaced for a few dollars.

Window Furnishings Are Used

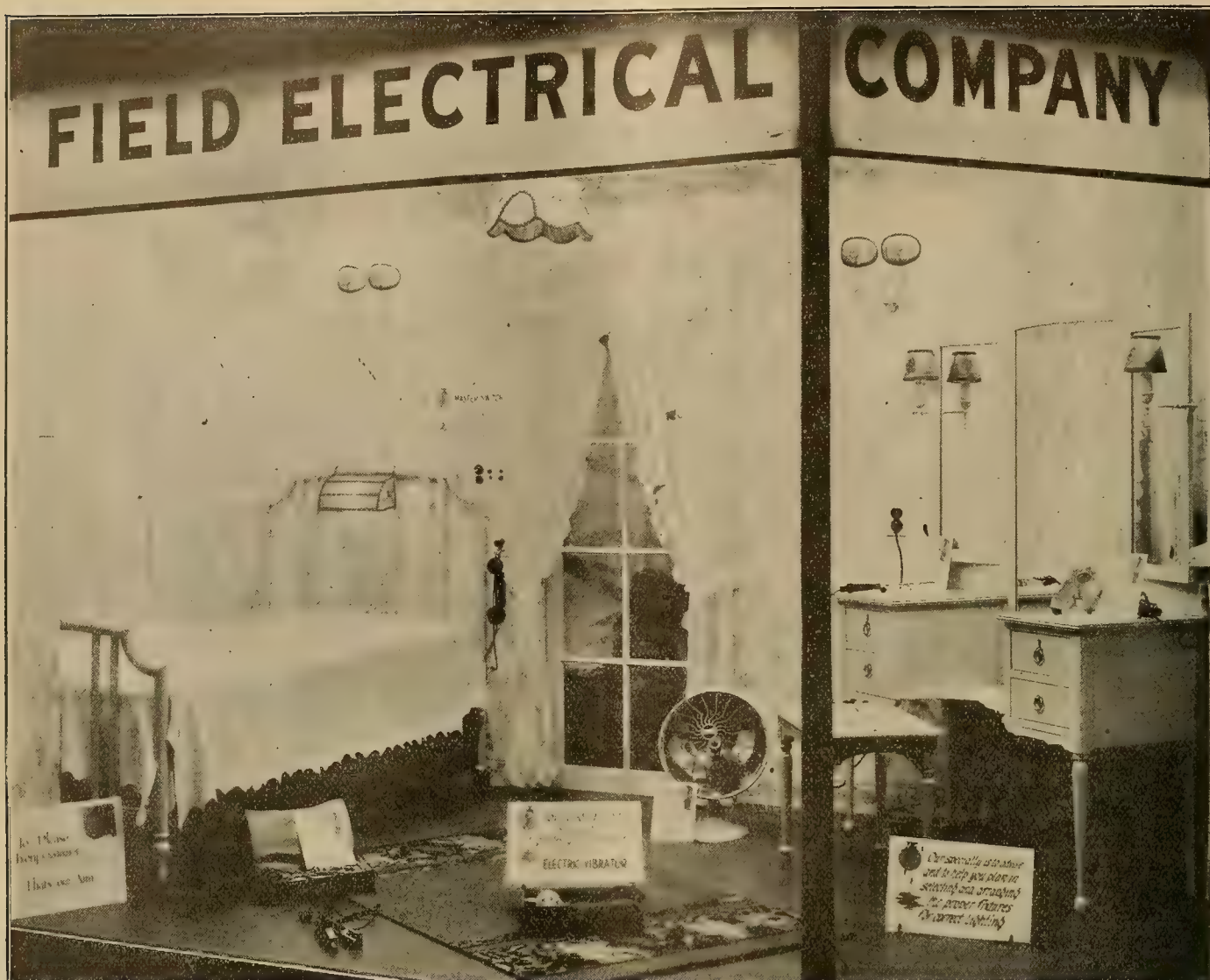
For the background I use a set of scenes, which are constructed of sections of wall board 4x8 ft. nailed to stout frames. These frames are constructed in the same manner as those used for scenery in a theater with the addition of a tongue on one side and a groove on the other. With this type of joint no other support is necessary. The frame is covered on



Fan display which was presented when the daily temperature averaged 98 deg. F. Epsom salts crystals were used to frost the windows.

in common with a great many others in the electrical industry, I considered the show window as a necessary evil and gave very little thought to it; in fact, I had never dressed a show window before. At the time that I made up my mind to experiment with window decorations merchandise sales were not what they should be so I started to investigate the cause and found that our windows were being dressed whenever the spirit moved some member of the sales force to do so.

After many discouraging attempts to get results, I decided to conduct a few experiments. I first made a check of the number of pedestrians that passed on the two sides of the street and the result of this check showed 32 to 1 in favor of the opposite



Master switch and other electrical conveniences were featured in this bedroom display which attracted much attention.

both sides with wall board giving two scenes to one set of frames, and the frames are periodically repapered at a cost of about \$5 with remnants of high grade paper secured from a local paperhanger. A French door, a common door, a window and a mantel were constructed to scale for these scenes. The mantel was built by a local sheet metal worker at a cost of \$12 and was finished to imitate glazed brick. When the mantel is not in use in the window it is used in the fixture sales room. We have four sets of drapes for our doors and windows and the total cost of all of the above equipment was \$86.

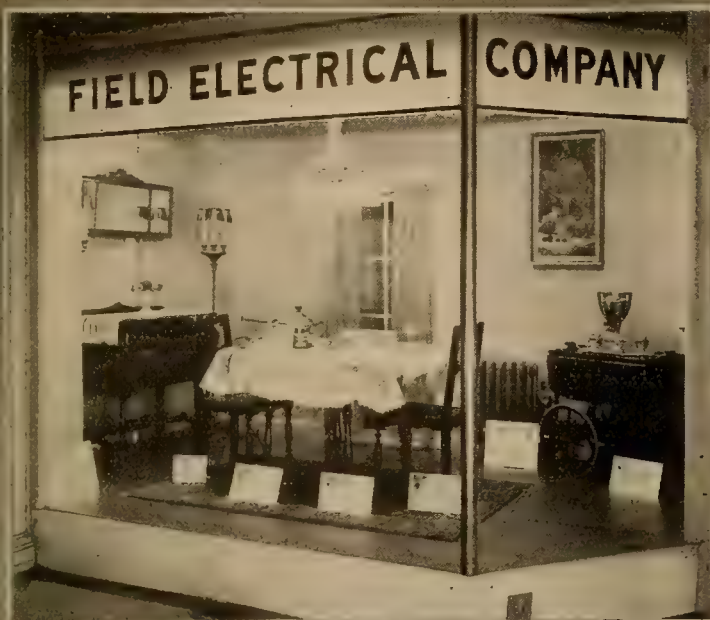
When a semi-open background is desired we use a set of decorative panels. We also have three painted backdrops which we use at the rear of the scenes to back up the windows and doors. These backdrops enable us to contrast a cozy lighted interior with a moonlit exterior.

Special Lighting Equipment Is Used

The lighting equipment for the window has been given particular attention. Next to the glass, running the full length of the window, is a Lightkraft reflector and above the window ceiling there are three rows of X-Ray reflectors spaced on 12-in. centers.

There is an opening cut in the ceiling, covered with frosted glass, under each reflector. In order that maximum flexibility for working out effects may be secured, the reflector circuits are wired with an independent switch leg from each reflector to the effect machine. A border light and footlight strip for lighting the back drop have been installed as well as a spot light and three X-Ray flood lights. To facilitate the hanging of fixtures five Elexits have been placed in the ceiling and convenience outlets have been provided for by the installation of three circuits for this use. The location of these outlets is constantly being changed to suit conditions. The scenic lighting effects are produced by a motor-driven effect machine of my own invention. This machine is equipped with dimmers, flashing devices and speed controls for mechanical effects and it is possible to procure one hundred and twenty-six different effects with it.

Considerable thought was given to the furnishings for the interiors that were to be used in the experiments and by cooperating with a local furniture company a satisfactory arrangement was made. This furniture house supplied the furniture without cost, even going so far as to order special pieces for



TYPICAL window displays of the Field Electrical Company of San Bernardino, Calif. The display shown at the lower left was presented during Health Week which was recognized by the mayor of the city. The window tied in with a national campaign appearing simultaneously. The other illustrations demonstrate how the company told the public of the advantages of the modern electric home. Each of these special feature displays was maintained in the window for one week.



the display work. During the time that the furniture was in the display window salesmen were instructed to quote prices and answer all inquiries concerning it. As a result of this several pieces were sold directly from the window. The furniture people were so well pleased that they have offered the Field Electrical Company the use of one of their windows for displaying appliances in conjunction with their furnishings.

Modern Home Portrayed in Windows

With this background equipment and the furniture from the local dealer I determined to inaugurate a series of window displays depicting various rooms of a model electric home. Each display was left in the window a week and created a substantial gain in the sale of the merchandise displayed. The average increase in sales for the entire series over the same period in 1923 was 36 per cent and it was noted that 23.6 per cent of our customers referred to our windows when making purchases.

The sales results from the windows have also been very satisfactory. Two displays—those depicting the model bathroom and the model kitchen—sold 84 wall type air heaters, 42 electric water heaters, 42 electric ranges and 42 electric refrigerators to one person for a new apartment house. The owner noticed these conveniences in our windows and had us call upon his architect and cooperate with him in the writing of the specifications for these appliances. We also made a substantial gain in immediate sales of these appliances.

The power of the show windows was also reflected in the activities of other merchants in San Bernardino. Prior to the time that the feature displays were put in our windows the store rooms on our side of the street had been occupied by non-merchandisers. As a result of our windows changing the traffic from 32 to 1 in favor of the opposite side of the street to 1.5 to 1 a dry goods store, a florist, a restaurant and a confectionery have moved to these locations on our side of the street. The confectionery was the last one to move and when the owner was asked why he selected the location he stated that he was a stranger to the city and that at first he had been attracted to the block by our show windows. After a careful check he found it to be the most desirable location in the city. The increased desirability of the block has naturally increased rents which have gone up 50 per cent in twelve months.

Detail Important in Displays

I have had a number of people tell me that I spend too much time on detail and that the passing public never pays any attention to detail. I have proved to my satisfaction that the public does pay attention to detail. Here are a few examples of trials that I have made to test the public's ability to detect incongruities in the displays. Take, for instance, our radio window which contained the wax figure of a woman. When this figure was placed in the window I noticed that her neck was dirty. The dirt was left on her neck and she was placed so that it was difficult to see the back of her neck. The first day the

window was shown to the public eighteen customers called our attention to the fact that the lady's neck was dirty. A little over a year ago I installed a forest scene in our window which was labeled Arrowhead Woods. I was short of native pine cones for the display so I used a few cones from the Giant Sequoias. Thirty-eight persons called our attention to the fact that the Sequoias were not natives of Arrowhead Woods. In a dining room display I purposely misplaced the salad forks. So many people called our attention to this error that we were forced to correct it on the second day.

The Psychology of Window Displays

The electrical industry has applied scientific precision to everything except its show windows. The psychology of window displays is capable of analysis and if one studies and experiments with different types of displays he will find that the following fundamentals are correct for most localities. Window displays cannot be subjected to simple unvarying rules, but there are certain underlying principles that must be observed. When starting to dress a window, try to think of the complete result as a picture. Pictures are the most universal language known to mankind for they are comprehended by all races and are the oldest known method of conveying a thought. The store front serves as a frame for the picture. The background is the canvas and the pieces of merchandise are the pigments. Make every display a living, breathing picture full of human appeal.

The primary aim of the show window is to bring the customer into your store. Therefore the display should create a demand through the power of suggestion. A billboard or newspaper advertisement may attract attention and create a desire for possession but the goods must be shown before the sale is made. Talk to your customer in a language that he understands, whether it be vocally or through your show windows. Build your displays to appeal to your trade. A display may be a work of art and still be a poor display because it has no definite message or because it directs its appeal to the wrong class of people. It is a woman who benefits the most from the use of electrical appliances. Therefore the appeal should be directed to her. However, it is well to remember that a man often makes the purchase or determines whether a purchase shall be made. To sell the woman emphasize the comfort and convenience to be had from the particular article displayed. To sell the man emphasize the time and labor-saving features. Direct a strong appeal to man's greatest emotion, namely, affection for his mate or parent.

Suggestions for Better Displays

Make your layouts in advance. Every display should be analyzed and planned before starting the work. When you run across a good idea make a note of it and file it for future reference. Arrange your file so that you will have a section for each month in the year. This will enable you to select a seasonal display without searching the entire file. Read

every page of your trade journals. This means advertising pages also. I consider the advertising pages the most important matter in any trade journal. Don't overlook any idea. Oftentimes a mediocre idea suggests a good one. Read home magazines such as Good Housekeeping, Ladies' Home Journal, etc. They help you to get the woman's point of view as most of the material in these magazines is written by women. Make a show window calendar showing the dates of important local and national events. Make a list of suggestions for show cards and file these alphabetically. Borrow ideas from other industries. Solicit ideas from your customers for your windows for it will cause them to feel that you place a high value on their opinions and will often supply you with some good ideas.

Feature One Article at a Time

Don't try to make a three-ring circus out of your show window. Give one act at a time and the results will be better. A window crowded with merchandise or decorative effects only serves to confuse the onlooker. The difference between a poor display and a good display is a window full of merchandise in the first case and a window filled with merchandise mixed with brains in the second case. Always display merchandise as nearly as possible in the way it is to be used. Never show an article where it is unrelated to the dominant idea of the display. Get away from the commonplace if you expect to get the most out of your windows. However, you should avoid freakish displays. Decorative effects and background are only a means to an end. The background and decorations should call attention to the merchandise, which should be placed so that each individual item is a feature attraction. The improper showing of merchandise will cause the loss of many sales. Every display should have a definite message forcibly portrayed. Make every change so apparent that it will be noticed even from a distance. Make your show cards, decorative ornaments and so forth, in harmony with the scene as a whole.

Make every display arrest the attention of the passer-by. However, care should be taken in the method used in arresting their attention so that the reaction which follows is not one of disappointment. There are certain types of displays known as curiosity displays. One of this type should appeal to the shoppers' curiosity the moment they see it, thus causing them to investigate further. But when they do investigate give them value received for the trouble to which you have put them. Don't trifle with the public's emotions. The average man or woman will resent any attempt to joke with them in public. Let me give you a concrete example of the wrong kind of curiosity advertising. A number of years ago when I was working for a grocery I conceived or borrowed an idea on curiosity advertising. I placed a lot of empty sugar barrels around town. The top of each barrel was covered with screen wire and a sign was tacked on the side of the barrel advising the public that the barrel contained live snakes. Upon looking in the barrel they found another sign stating that pure sugar could be had at Blank's grocery. Now you can imagine how embar-

rassed one felt after looking into the barrel to turn and find a group of bystanders laughing at him. There was only one thing that idea lacked to make it a success, and that was real live snakes. Had the snakes been in the barrel the onlooker would have been repaid for his efforts and would have also noted that pure sugar could be had at Blank's grocery.

Make Show Cards "Silent Salesmen"

Remember that your show cards are a medium of expression so don't leave them to the artistic conception of a sign painter. Don't make your show cards resemble a puzzle. Cards of this kind were all right in the days when we built our houses with a



Display used to announce the local electric home exhibit. The home and exhibit details were to correct proportion and were a faithful reproduction of the actual exhibit.

scroll saw, but in this age most of us are too busy to work puzzles. The show cards should be legible and not too large. Remember that you are selling merchandise, not cardboard. Your cards should tell the public of the strong selling features of the merchandise and should induce the passer-by to buy now. When you write your show cards remember that you are talking directly to your customers, so conduct yourself accordingly. Avoid offensive persistence and solicit their patronage as courteously as if they were in your store. A show card that tells the people what they want to know without asking questions serves its purpose admirably. Emphasize the usefulness and quality of the merchandise with your show cards. Stock cards are not practical. It is always best to prepare your cards especially for the display in which they are to be used.

If the average dealer found one of his employees misrepresenting the firm he would discharge him immediately. But he will carelessly allow his show windows to misrepresent the firm. Put up a good front and then live up to it.

The Electrical Dealer's Opportunity in Radio

By A. S. Lindstrom

Radio Sales Engineer, San Francisco, Calif.

THE merchandising of radio, not only of completed sets but of parts and accessories, appears after several years of floundering to be developing into certain recognized channels. Strange as it may seem to the uninitiated the sale of completed sets is gravitating strongly in the direction of the large retail music houses, department stores and exclusive radio stores. These retail agencies do not center their efforts on parts and equipment, but leave this branch of the radio business scattered between the recognized radio dealers and the retail stores that are putting in stocks of sets, parts and accessories.

From the very inception of radio these merchandising practices have presented a most interesting spectacle. When radio was first developed into a business of considerable proportions about five years ago, the retail business was centered almost wholly in electrical stores. Since that time there has grown up a distinct class of radio dealers, some of whom have installed expensive and elaborate show rooms and undertaken the retailing of radio sets and equipment from a thoroughly practical point of view. Recently the department stores have installed complete radio departments and are now handling a considerable volume of radio business.

Radio has appealed to the imagination of the larger music houses and many of these music concerns now carry complete and extensive radio stocks in conjunction with those of pianos, phonographs and other musical instruments. As the public has been for so many years educated to go to the music houses for its musical supplies, it seems but natural that these stores should occupy a very important place in the merchandising of radio. These music houses, however, are centralizing their sales efforts upon complete sets and do not, to any great extent, handle parts.

A high class radio set, capable of producing volume, clear reproduction and satisfactory distance, means an expenditure of from \$100 to \$400, depending upon the type of receiving set, and particularly upon the class of cabinet container. Hardwood cabinet containers, with the entire set self-enclosed, have within the last two years become exceedingly popular. The amount of money involved in the purchase of such a receiving set seems to require an arrangement by which payment can be made in monthly installments. The music stores, department stores and exclusive radio dealers have perfected plans whereby radio sets are sold upon the installment plan. As department stores and music dealers have been educated for years to selling upon the in-

stallment basis and have the machinery and equipment for conducting it upon this basis, they are naturally and logically developing their sales to large proportions.

Successful selling of complete receiving sets involves in nine cases out of ten, the installation of the antenna, lead-in wires, and other necessary mechanical installation. A considerable proportion of the buyers of complete sets would rather purchase a set completely installed than to endeavor to make the installation themselves. This situation requires that houses selling complete sets provide experienced men to make these installations. Very frequently the failure of a set to operate satisfactorily is traced entirely to the inexperience and lack of knowledge of the operator. This requires instruction which frequently is considered as a part of the service rendered to the purchaser of a receiving set.

There seems no doubt that radio sets will be sold largely through the channels enumerated above. The radio "fans," however, prefer to buy their parts and build their own sets. Most radio dealers carry large stocks of parts. The electrical dealer, too, has found that a radio department carrying modern parts and equipment is a profitable branch of his business.

The Field for the Electrical Dealer

It would appear, from a review of the radio merchandising situation, that there is a vast field in parts and equipment for the recognized electrical dealer. The criticism, if we would call it such, which seems to be directed toward the merchandising policies of the electrical dealer, is that in the display and handling of radio parts and equipment he does not always give this branch of his business the same detailed and careful attention that he gives to his electrical supply department. Radio in its very nature, dealing as it does primarily with high class entertainment, should in the sales program be associated with this idea.

There is no doubt that many electrical dealers have made an outstanding success with their radio departments. Radio parts and equipment naturally fit in with the sale of electrical supplies. That radio parts and equipment may be developed into a very important and essential part of the total volume of sales of any electrical dealer is evident to anyone who has made a study of the situation.

The installation and successful conduct of a radio department requires that the dealer carry in stock only the highest quality parts and sets, and that he be or employ for this branch of the business an experienced man who knows radio and who possesses a natural selling ability.

Government Ownership

By Hon. Herbert Hoover*
Secretary of Commerce

SENATOR La FOLLETTE'S party proposes government ownership and operation of railway and other public utilities. The Senator emphasizes this: "I am for government ownership of railroads and every other public utility—every one." This means all railways, power, light, telephone and telegraph companies. The Republican party stands for private ownership, with the prevention of abuse through government regulation of service and rates or profits. Between them we must choose. Either we are to remain on the road of individual initiative, enterprise and opportunity, regulated by law, on which American institutions have so far progressed, or we are to turn down the road which leads through nationalization of utilities to the ultimate absorption into government of all industry and labor. What the Senator proposes is far more than a transitory experiment of government in business; it is a change in our social, economic, and political principles that will react to revolutionize our government itself.

In its immediate form this is a proposition that the government should buy and run the railways, electrical and other utilities, valued by official commissions at about forty billions of dollars, with two million seven hundred thousand employees, requiring two billions annually for bond interest, with an operating budget of ten billions per annum. To keep pace with natural growth these concerns must spend two billions of new capital yearly for extensions. This is a financial transaction and a venture into business of a magnitude never before undertaken by any man or by any government, democratic or otherwise—except in Russia. Surely before we embark on such a voyage we should look into the possibility of profit, examine the chart of the place we are going, and consider the capacity of our vessel to carry the cargo.

It is for the American people to decide. If they are to decide rightly they should have the reasons

set before them in terms of sober economic and social thought, not in vituperation and appeals to hate. I accredit the sincerity of the advocates of these propositions, and I believe they have the manhood to credit ours. There is but one consideration—public interest. If I believed for one moment that this adventure would reduce rates, that it would produce better service, that it would decrease taxes, that it would benefit the employees, that it would maintain discovery, initiative, and advance in the development of these services, that it would not wreck our democracy, that it would strengthen the foundations of social and spiritual progress in America, or even that it would do a few of these things, I would unhesitatingly accept this proposal, stupendous as it is.

But I do not believe it. I am convinced not only from the experience of our own country, but from the attempts made abroad, that government operation is a step backward in every one of these propositions. It is the negation of progress. America has found the true road of advancement in these enterprises through sustained initiative and equality of opportunity to our people with public control to prevent abuse. Our salvation consists in following this line with increasing intelligent devotion.

Much of the present agitation is based upon conditions, not as they are today but as they were a generation ago. There were then great abuses that called for a remedy. The Republican policy of public regulation and the historic moral upheaval to which Theodore Roosevelt contributed more than any one man cured the worst of these evils and created the machinery of government to meet the rest. Theodore Roosevelt was the enemy of government ownership and the advocate of public regulation.

There is scarcely a single utility today that is not under public control through some governmental commission, local or national. These commissions today fix the rates, the issues of stock, the time tables, the car service, the profits. Our great national water powers are reserved to the government



HERBERT HOOVER

says, "Either we are to remain on the road of individual initiative, enterprise and opportunity, regulated by law, . . . or we are to turn down the road which leads through nationalization of utilities to the ultimate absorption into government of all industry and labor."

*Excerpts from a radio address delivered from Washington, D.C., Sept. 29, and broadcast over nationally interconnected stations.

through fifty-year leases, under public control. And our commissions are not alone preventing abuse; they are maintaining initiative, enterprise, and progress in our railway and other utilities, as witness their enormous growth and constantly improving efficiency and service.

Regulation has, through stabilizing rates, reduced the cost of capital by increasing the security for the savings of our people. From this security and within our generation there has come a new tide, and that is toward popular ownership as distinguished from government ownership. These enterprises are no longer owned or controlled by a few. One of our great service corporations has nearly 400,000 stockholders, another over 200,000. The power companies have over 700,000, their bonds are directly and indirectly, through our mutual insurance companies and savings banks, in the hands of literally tens of millions of owners. A silent revolution is transferring ownership to the public. Moreover, the new generation of administrators of these enterprises has firmly grasped its responsibility to the public. Indeed there are deep and promising currents originating in our economic life driving toward a mutualization of public and private interest, employer and employee interest with promise of a new period in industrial development. There has been a genuine growth of business conscience and service, and this growth is far more precious than any amount of legislation.

And from it all we have by and large evolved the best actual service to the people from utilities that there is in the world. It may not be perfect, but no one who has tried a European government railway or a telephone needs conviction of our superior service. Moreover, there is a diffusion of service and use among our people double and treble the proportions to the population of any other country. A larger proportion of our homes have electric lamps, a larger proportion have telephones. Many of our people travel by rail and they travel more miles. We ship more goods per person, and our workmen have more power at their elbow than any other workmen in the world. The wages in our utilities give the highest standards of living and comfort on the earth. If our utilities were dominated by the malignity that some contend, these things would never have come about.

Effect Upon Our Democracy

Neither our national nor our state governments are planned or equipped for the task of government operation of utilities. Nobody ever tried it on our stupendous scale of a continent, but there are governments which, in their smaller scope, do operate in some fashion some of their utilities. Since it is always in worse fashion than ours, their example is no temptation to imitation, but it does illustrate that some governments, on some scale, in some fashion, can operate some of them. But none of them have ever attempted to operate all the utilities, nor does any one of them possess 15 per cent of our railway mileage, or 6 per cent of our power, or 15 per cent of our telephones, and so on.

The very first and fundamental difficulty that

our form of government presents is the relation of the states to the federal government. For in our plan we conceive that liberty requires a great measure of decentralization in authority. If these public utilities are to be operated by the federal government we at once deprive the states of their measure of authority and control over railway, power, light, and communication companies—we make the service in these states dependent upon the will of Washington, thousands of miles away. It is an impossible conception that we give the states the power to regulate the business of the federal government as they now regulate these services. Or are we going to divide the railways and power and communications into 48 systems, each ending at the boundary of its own state? Whichever we do will crack the timbers of our government.

If we pile these forty billions of business and two million seven hundred thousand employees upon the government, one of two things happens. Either the 530 members of Congress or the hundreds of members of state legislatures become their real boards of directors, or, as it has been claimed, these great businesses could be placed in the hands of non-partisan commissions or government corporations, somehow free from politics and the dead hand of bureaucracy. Neither alternative will work. If we were to set up such agencies, so free from restraint of the Congress and legislatures as to accomplish these objects, we would have created gigantic despotisms controlling the well-being of our whole people—and incidentally, controlling the very election of our officials. As a matter of fact, we can do nothing of this kind if we are to maintain a democracy. We can not have a democracy and deprive our elected representatives of their control of government investment, their power to fix salaries and wages, their independence in the investigation of the conduct of public officials. The reservation of any or all of these powers renders any kind of a commission subservient to the members of legislative bodies, no matter what the theory is. When they are subservient to elected officials, politics will be their daily need. Above all, the members of our legislative bodies represent districts, states, parties, and groups of opinion. Each member is expected by his constituents to look out for their local or group interests first. They have to be elected upon the results they obtain. Partisanship, "log-rolling," and politics would be the inseparable accompaniments of administration. No great business can be efficiently administered by such a board or such a basis of choice. We shall convert business into politics, and surrender efficiency for spoils. If we distributed railway extensions as we distribute public buildings; if we located electric power plants as we locate reclamation projects; if we divided up public industries generally as we share river and harbor improvements and army and navy stations—then as surely as night follows the day facilities will be wastefully provided for those districts or groups which are politically strong, and they will not be adequately provided for the districts or groups that are politically weak.

Higher Rates to the Public

Unless the federal or local governments can give the public lower rates, there is no use undertaking the gamble.

If the government is to reduce rates it must do so either by the saving of private profits or by reducing operating expenses or lumping them on the taxpayer. During the past four years the railways have on an average earned less than 4 per cent on the Interstate Commerce Commission valuation. Even if this value were reduced by 25 per cent, they would have earned only 5 per cent. Our electrical utilities are regulated at earnings between 6 and 8 per cent upon their invested capital. The government could not borrow the huge sums necessary at less than 5 per cent.

In a sale to the government the constitutional requirements would for various legal reasons, probably result in a much larger sum than the forty billion dollars of present valuations by commissions and others.

Moreover, the wasteful distribution of the hundred and fifty millions of capital invested annually in the Post Office, Reclamation Service, Shipping Board, rivers and harbors and roads, would not be a patch on the waste in appropriations when our legislative bodies get a chance to handle two billions per annum of new capital outlay. For all these reasons I am convinced that interest charges alone to the government would be larger than the present utility profits, and no economy lies there.

Nor can the government operate as economically as private enterprise. If we take over nearly three million new employees into public service we must put them under an air-tight civil service, to be hired by a separate commission and promoted by seniority and at once we have created a bureaucracy. Otherwise, we would have nearly three million jobs to be given out and a political debauchery unparalleled in all history.

Increased Taxes

Another question worth examining is the direct and indirect tax burdens which will be imposed upon the public, assuming always that rates pay operating expenses and interest. The addition of forty billion dollars to the national debt differs much from the debts of many thousands of private enterprises now comprised in these public utilities. The failure of a single private enterprise is a loss to its owners only, but with this entire investment transferred to the government every citizen would pay every loss of capital, directly or indirectly from taxes or rates, whether he liked it or not. When individuals enter upon a foolish project they pay for it, but if the government does the same thing the foolish and the wise must pay for it.

Today the combined utilities contribute about six hundred million dollars in taxes to the federal and local governments. It is unlikely that in government operation our federal government will pay taxes to the states or the states to counties out of utility rates. Thus the local governments would need to find other sources of revenue. If the customers of

these utilities and the taxpayers were identical in their participation it would not matter, but it happens that utilities have a larger ratio of investment and taxes in the farming districts than they have in the big cities. It would damage the farmer of Massachusetts but 3 or 4 per cent to denude the state of utility taxes, but it would increase taxes 40 per cent in many agricultural counties in other states.

And above all, if the history of other governments operating utilities counts, the inefficiency in government would not be taken up in rate increases, by which the actual user pays, but by lumping it onto the taxpayer.

Employees Worse Off

The next question to examine is whether the employees would benefit by being incorporated into the government service. The first and foremost result of such an operation would be a dispute over the right to strike. It is by no means certain that a government can continue as a government and admit the right of government employees in vital services to strike against it. Nor can legislative bodies delegate the right to settle wages and salaries to any commission or they will have delegated their control over expenditures, which is one basis of democracy. In any event, under government ownership employees must in final analysis bargain with legislative bodies, and bargaining will rest not upon economic need or economic strength, but on political potency. The present federal employees, denying themselves the right to strike, have just now, after eight years, succeeded in getting some of their deserved increases in pay. The public utility employees have had them already for years. Their wages are today the highest real wage in the world. Some have assumed that the political strength of this great mass of employees will enable them to dictate the election of legislative members and thus secure their desires. This means the creation of another bloc, the arraying of class against class, perhaps the most dangerous tendency in our politics today.

It substitutes internal pull and external politics for individual endeavor. It puts a damper on achievement, a premium upon wire-pulling. It penalizes whole-hearted devotion to work.

But there lies even a broader issue of the ultimate results to the freedom of labor. Upon it I can do no better than to quote from Mr. Gompers in a speech at Montreal in June, 1920:

"I believe there is no man to whom I would take second position in my loyalty to the Republic of the United States, and yet I would not give it more power over the individual citizenship of our country. . . .

"It is a question of whether it shall be government ownership or private ownership under control. If I were in the minority of one in this convention, I would want to cast my vote so that the men of labor shall not willingly enslave themselves to government authority in their industrial effort for freedom. . . . Let the future tell the story who is right or who is wrong, who has stood for freedom and who has been willing to submit their fate industrially to the government."

WASHING MACHINE DIRECTORY

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A list of washing machine manufacturers, giving catalog information on the equipment of each, with complete list of Western Distributing Agencies where repair parts may be secured. The publisher does not guarantee this information, but to the best of our knowledge it is correct at date of publication. When referring to this list in any way, mention the *Journal of Electricity*.

Key to Abbreviations			Im—impeller type			RM—Robbins & Myers			W—wood			Am—American			Z—zinc		
O—oscillating type			DFM—Dayton Fan & Motor Co.			Em—Emerson			M—metal			C—copper			VM—various models		
VC—vacuum cup type			Co.			Dom—Domestic			Sw—swinging			TC—tinned copper					
Cl—cylinder type			Wx—Westinghouse			Cen—Century			St—stationary			Cz—copper, zinc lined					
D—dolly type			GE—General Electric						An—Anchor			GI—galvanized iron					
MANUFACTURER	TRADE NAME	Operation	MOTOR		WRINGER	TUB			RETAIL PRICE		WESTERN SALES REPRESENTATIVE	WESTERN DISTRIBUTOR	Nearest Point Which Repair May Be Obtained				
			Horse Power	Maker		Type	Length in Inches	Dimensions	Capacity (Sheets)	Material				Eastern	West of Rockies		
Almetal Mfg. Co., St. Louis, Mo.	"Almetal" "Pollyanna"	VC O	1/4 1/4	GE GE	W W	11 11	19x18 26x17	6 7	C C	\$135 \$120	\$150 \$135			Distributor.			
Altorfer Bros. Co., Peoria, Ill.	"A. B. C."	Cl O D VC	1/4 1/6 1/4 1/4	Wx Wx Wx Wx	M M W M	12 12 11 12	22x24	6 6 6 8	W or Z C	\$145 99 95 150		R. M. Allyn, Richter Sales Co., 310 Stewart St., Seattle	A. A. Wilson, Los Angeles E. W. Murray Ltg. Co., Spokane Richter Sales Co., Seattle Electric Service Co., Portland Maxwell Howe Co., Oakland	Distributors.			
Apex Appliance Co., 3223 W. 30th St., Chicago, Ill.	"Apex"	O O	1/6 1/4	GE RM Wx	M M	11 12	..... 16	6-9 TC	TC	..... .....		A. M. Smith Co., Los Angeles	Dealers	Dealers	
Apex Elec. Mfg. Co., The 1067 E. 152nd St., Cleveland, Ohio	"Rotarex"	Cl	1/4	Own	M	12	17x18	8	G C	\$152.50 \$167.50	\$157.50 \$172.50	G. A. Buckley, 1405 Walnut St., Kansas City, Mo.	The Apex Elec. Distrib. Co., San Francisco, Denver, Fresno North Coast Electric Co., Portland, Seattle, Tacoma, Spokane Electrical Equip. Co., Butte Illinois Elec. Co., Los Angeles Inter-Mountain Elec. Co., Salt Lake City	Distributors			
Automatic Elec. Washer Co., Newton, Iowa	"Automatic"	D O	1/4	Wx GE	W or M	12	.....	6 and 12	C or W	\$110	\$120	L. A. Francis, 5208 Manila Ave., Oakland C. J. Reid, 8 Front St., Portland	Domestic Elec. Appl. Co., Seattle Inter Mountain Elec. Co., Salt Lake City	Oakland Los Angeles Portland		
Barlow & Seelig Mfg. Co., Ripon, Wis.	"Big 3"	VC	1/4	Em	W	11 and 12	.....	6 to 8	C	VM \$100 to \$150	VM \$110 to \$165	Dohrman Commercial Co., San Francisco	Dohrman Commercial Co., San Francisco	Distributor		
Buckeye Prima Co., The Sidney, Ohio	"Prima"	O	1/4	GE	M	12	.....	8	W	\$160	.....	H. R. Christy, 322 Leary Bldg., Seattle	H. R. Christy, 322 Leary Bldg., Seattle	Distributor	
Chicago Dryer Co., 2210-20 N. Crawford Ave., Chicago, Ill.	"Chicago"	O	1/4	Em	M	12 and 14	26x18 26x21 26x24	9 12 15	Cz	\$200 to \$375 VM			M. E. Hammond, Pacific Bldg., San Francisco S. W. R. Dally, Seattle Maritzen-Kuns Co., Los Angeles	Distributors			
Clarinda Mfg. Co., Clarinda, Iowa	"New Clarinda"	D Cl	1/6 1/4	GE GE	M M	10 12	22x22 25x25	6 6	W C	\$80 \$130	\$90 \$140	Thos. T. Hoffmire, 178 W. 41st Place, Los Angeles					
Clark Cadle Harmon Corp., Rochester, N. Y.	"Harmony"	Cl	1/4	Wx	L	12	18½x19	8	W	\$150 to \$170		Bert D. Keller, 821 Market St.	Dunham, Carrigan & Hayden Co., San Francisco	San Francisco			
Coffield Washer Co., The Dayton, Ohio	"Coffield" A "Coffield" D	O O	1/4 1/4	Sp Sp	Sw Sw	14 12	22x22 22x17½	10 8	TC TC	\$160 \$150	\$165 \$155	"Washer" Wilson, 819 So. Hill St., Los Angeles	"Washer" Wilson, Los Angeles Honeyman Hardware, Portland Northwest Washer Co., Seattle	Distributors			
Conlon Corporation, 52nd Ave. and 19th St., Chicago, Ill.	"Incomparable Conlon"	Cl	1/4	GE	M	12	23x22	6	C GI	\$180 \$170		Woodill-Hulse Elec. Co., Los Angeles	Same Weisbach Company, 863 Mission St., San Francisco	Distributor			
Davis Sewing Mch. Co., The Dayton, Ohio	"Blue Bird"	O	1/6	GE Wx	Sw	11	16½x27	8	C	\$160	\$160	C. A. Eastman, 213 Corbett Bldg., Portland	Blue Bird Appliance Co., Seattle Alexander & Lavenson, San Francisco K. P. Loop, McMinnville, Ore.	San Francisco			
Eden Washer Corp., 80 Maiden Lane, New York	"The Eden"	Cl	1/4 1/6	RM	Sw	12	24½x22	8 12	GI TC	..... \$160 \$175 \$185 \$200		L. M. Mintzer, 200 Davis St., San Francisco	L. M. Mintzer, 200 Davis St., San Francisco Woodill & Hulse Elec. Co., Los Angeles Eden Serv. Sta., Portland	Distributors		
Dawn Mfg. Co., The Bridgeport, Conn.	"Dawn"	VC	1/6	GE	Am	12	.....	6	....	\$85	\$85	Frederic A. Clarke 351 Oak St., Glendale, Cal.		336 S. Broadway, Los Angeles	
Delco-Light Company, Dayton, Ohio	"Delco-Light"	O	1/6	DL	M	11	22x22	8	C	.....	\$160		W. L. Cochran, Inc., San Francisco Ivan L. de Jongh, Los Angeles Modern Appliance Co., Seattle	Distributors		
Federal Electric Co., 8700 S. State St., Chicago, Ill.	"Federal"	O	1/4	Wx	L	....	22x27	8	C GI	\$175	\$175	Federal Electric Co., Landregan & Powell Sts., Oakland	Lushington Elec. Co., Seattle, Wash. Cook Bros., Los Angeles	Distributors		
Foote-Burt Co., The Cleveland, Ohio	"Aerobell"	VC	1/4	GE	M	....	18½x24	8	C	\$165	\$175		Barker Bros., Los Angeles	Los Angeles		
Fosston Mfg. Co., St. Paul, Minn.	"Pal-O-Mine" "New Liberty"	O Cl	1/6 1/4	Wx Wx	St Sw	.... ....	..... .....	6 8	C W	\$125 \$145	..... .....	Pryser & Herman, 815 Union League Bldg., Los Angeles	Western Agencies, Inc., San Francisco	San Francisco
G. R. S. Products, Inc., Albany, N. Y.	"G-R-S"	Cl	1/4	Own	Sw	12	.....	8 to 18	C GI	\$140 to \$220	.....	A. C. Holden, 1964 Eldorado Ave., Berkeley	Dealers	Factory	
Getz Power Washer Co., Morton, Ill.	"American Beauty"	O O	1/4 1/4 1/6	Wx GE Wx GE	M M W	12 12 11	24x26 26x28 24x26	6 8 6	C C C	\$135 \$155 \$99	\$145 \$165 \$109	Getz Washer Sales Co., 910 S. Grand Ave., Los Angeles	Same	Los Angeles			
Geyser Electric Co., 5008 Bloomingdale Ave., Chicago, Ill.	"Geyser"	Cl	1/4	Em Dom	L	11	.....	3 to 9	C GI	\$75 to \$175	\$85 to \$185	Ion Arnold, Westminster Hotel, Los Angeles		Chicago, Ill.		

WASHING MACHINE DIRECTORY

(CONTINUED)

Key to Abbreviations			D—dolly type Im—impeller type DFM—Dayton Fan & Motor Co. Wx—Westinghouse			GE—General Electric RM—Robbins & Myers Em—Emerson Dom—Domestic Wg—Wagner			Cen—Century L—Lovell W—wood M—metal Sw—swinging			St—stationary An—Anchor Am—American C—copper TC—tinned copper			Cz—copper, zinc lined GI—galvanized iron Z—zinc NP—Nickel Plated VM—various models		
MANUFACTURER	TRADE NAME	Operation	MOTOR		WRINGER	TUB			RETAIL PRICE		WESTERN SALES REPRESENTATIVE	WESTERN DISTRIBUTOR	Nearest Point At Which Repair Parts May Be Obtained.				
			Horse Power	Maker		Type	Length in Inches	Dimensions	Capacity (Sheets)	Material				Eastern	West of Rockies		
Ag Bros. Co., Peoria, Ill.	"Haag"	D Cl O	1/4	GE RM Em	W M M	12	.....	6 6 7	W TC TC	\$88 to \$145	H. C. Hopkins, 323 Phelan Bldg., San Francisco	Elec. Washer Co., W. E. Peters, Seattle, Wash. Cook Bros., 653 So. Figueroa St., L. A.				
rtton Mfg. Co., Port Wayne, Ind.	"Horton"	VC D VC	1/4 1/6 1/4	GE GE GE	M M M	12 10 12	18x25 18x25	8 6 8	C W VE	\$160 \$80 \$165		Baker Hamilton & Pacific Co., S. F. A. A. Wilson, Los Angeles Hardware Jobbers	Distributors				
urley Machine Co., 2nd St. & 54th Ave., Chicago, Ill.	"Hurley Thor"	CL	1/6 1/6 1/4 1/4	GE Wx GE Wx	M W W W	11 12 14	..... to 12	6 C or GI or W C	\$125 to \$275	\$135 to \$280	Hurley Machine Co. J. W. Ferry, 425 Rialto Bldg., San Francisco	Pacific States Electric Co., San Francisco, Los Angeles, Oak- land, Portland and Seattle	All branches of distributor			
	"Hurley Superior"	O VC	1/6 1/6	GE Wx	M M	11 11	..... to 8	5 C	\$95 to \$140	\$99 to \$150						
Johnson Elec. Washer Co., 40th & Adeline Sts., Oakland, Cal.	"Johnson Impeller" "Johnson" "Johnson"	Im Im D	1/4 1/6 1/6	Wag Wx Wx	Sw St St	11 11 11	14x22 14x22 14x22	8 6 6	C C C	\$100 to \$175	\$100 to \$175	Johnson Elec. Washer Co., 40th & Adeline Sts., Oakland, Cal.	Factory, Oakland Geo. W. Rethschult, 316 Commercial St., Los Angeles L. Brandenburger, Salt Lake City	Oakland Los Angeles Salt Lake City			
Landers Frary & Clark, New Britain, Conn.	"Universal" "Whirlwave"	Cl O	1/4 1/4	RM Wx Wx	W M M	12 12 12	18x21 18x26	6 C 8	GI C C	\$150 \$162 \$150	\$150 \$162 \$150	Landers, Frary & Clark, Call Bldg., San Francisco	Electric Appliance Co., San Francisco Baker Hamilton & Pacific Co., S. F. Seattle Hdwe Co., Seattle Electric Corporation, Los Angeles Marshall-Wells Co., Portland	San Francisco and Los Angeles			
ndryette Mfg. Co., 19 E. 152nd St., Cleveland, Ohio	Laundryette	VC	Dom	Ohio	.....	.....	17 1/2 x 26 1/2	6	.....	.....	.....	W. S. Cochran, San Francisco J. L. De Jongh, Los Angeles Modern Appl. Co., Seattle		
yttag Co., The Newton, Iowa	"Maytag Gyrafoam"	Cl	1/4	GE	Sw	12	22x22	6	A	\$155	\$165	Chas. H. Long, 315 Belmont, Portland	Schluter's, Los Angeles, San Francisco Holly-Mason Hdwe Co., Spokane The Salt Lake Hdwe Co., S. L. C. Sloat Wholesale Co., Portland Southern Electrical Co., San Diego Stewart Wholesale Co., Boise, Idaho West Coast Sales Co., Oakland	Representative or Distributors			
adows Mfg. Co., Bloomington, Ill.	"Meadow Lark" "Greyhound" Master No. 2 Laundrola	Cl O Cl O	1/4 1/4 1/4	RM and GE	M M M	11 11 11	18x20 18x28 18x20 18x30 18x22	6 8 6 12 6	GI C C GI C	\$135 \$155 \$150 \$125 \$220 \$130	L. A. Robinson, 616 W. 9th St. Los Angeles	Manufacturers Rep. Co., San Francisco Fobes Supply Co., Portland, Seattle Capital Elec. Co., Salt Lake City Mine & Smelter Supply Co., Denver Butte Elec. Supply Co., Butte So. Cal. Appl. Co., Los Angeles	All Jobber Representatives				
Modern Laundry Mch. Co., Kansas City, Mo.	"Mola"	Cl	1/4	.....	W	12	.....	.....	.....	\$130	\$135	Geo. E. Prine, care of A. A. Wilson, 606 S. Spring St., Los Angeles	A. A. Wilson, 606 S. Spring St., Los Angeles	Los Angeles
One Minute Mfg. Co., Newton, Iowa	"One Minute"	Cl D	1/3 1/4	Dom Dom	Sw Sw	12 12	.....	6 6	C W	\$145 \$99	\$152 \$106.50	A. J. Ratelle, 619 Pine St., Seattle	Dohrman Commercial Co., Farnelee-Dohrman Co., Los Angeles	San Francisco		
Puffer-Hubbard Mfg. Co., 601-32nd Ave., S., Minneapolis, Minn.	"Daylight"	VC	.....	Em	W M	12 12	.....	.....	C W	\$155	\$165	Puffer-Hubbard Mfg. Co., 207 Railway Exchange, Portland		
Age Arms Corp., Utica, New York	Savage Washer and Dryer	R	1/4 1	Wx Wag	No	ne	26 1/2 x 26	7	GI C	.....	.....	C. W. Adams, Rialto Bldg., San Francisco	L. C. Warner Co., San Francisco, Seattle Hansen Furn & Music Co., Brigham, Utah	Distributors	
beam Elec. Mfg. Co., Evansville, Ind.	"Sunbeam"	O	1/6	Wx	M	12	19x23	8 6 18	C	\$155 \$135 \$235	F. M. Hills, 516 Bancroft Blvd., San Diego		San Francisco				
ny Line Appliances, Inc., 358 Beaufait Ave., Detroit, Mich.	"Sunnysuds"	O	1/4	Dom	M	12	.....	.....	C	\$125	\$135		Woodhill-Hulse Elec. Co., L. A. Poole Elec. Co., 1206-4th Ave., Seattle		
acuse Washing Mch. Corp., Yrcause, N. Y.	"Easy Vacuum Elec. Washer"	VC	1/6	GE RM	M	12	.....	8	C GI NP	\$155 \$125 \$139	\$165 \$135 \$149	J. Lee Richards, San Francisco Syracuse Washing Mch. Sales Co., 1109 Market St.		San Francisco		
"1900" Washer Co., inghamton, N. Y.	"Cataraction"	O	1/4	RM	Sw	.....	.....	8	.....	\$155	\$165			
stern Electric Co., New York City	"Western Electric"	Cl	1/6	Own	Sw	11 1/2	22x23	6	GI TC	\$137.50 \$150.00	\$147.50 \$160.00	Western Electric Co., San Francisco, Los Angeles, Oakland, Seattle, Tacoma, Portland, Spokane, Denver, Salt Lake City	Western Electric Co., San Francisco, Los Angeles, Oakland, Seattle, Tacoma, Portland, Spokane, Denver, Salt Lake City	All Branch Offices			
ite Lily Mfg. Co., avenport, Iowa	"White Lily DeLuxe" "White Lily" Thrift"	Cl C	1/4 1/4	A&B A&B	Sw Sw	12 12	26x30 26x36	6 6	GI C GI C	\$150 \$132.50	\$165 \$147.50	H. J. Valentine, 488 N. Cypress, Burbank, Cal. Same		Los Angeles			
E. Williamson Co., 2 Grace St., San Francisco	"California Maid"	Cl	1/6	Cen	Sw	11	18x26	8	GI	.....	\$125	H. E. Williamson Co., San Francisco		San Francisco		
odrow Mfg. Co., ewton, Iowa	"Woodrow"	Im	1/4	Em	Sw	12	6	W C	\$102	\$107		W. E. Dooley & Co., Seattle Calif. Woodrow Wash. Mach. Co., Long Beach	Distributors			

ELECTRIC IRONER DIRECTORY

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A list of Electric Ironer Manufacturers giving catalog information on the equipment of each, with complete list of Western Distributing Agencies where repair parts may be secured. The publisher does not guarantee this information, but to the best of his knowledge it is correct at the date of publication. When referring to this list in any way, mention the **Journal of Electricity**.

Key to Abbreviations

E—electric heat
G—gas heat
Gn—gasoline heat
Wx—Westinghouse

GE—General Electric
R&M—Robbins & Myers
Dom—Domestic

WE—Western Electric
B—belt drive
G—gear drive

FC—foot control
HC—hand control
A—automatic
VM—various models

MANUFACTURER	TRADE NAME	Shipping Weight (lbs.)	Dimensions (floor space)	Length of Rolls (in.)	Heat for Rolls	Wattage for Rolls	MOTOR		Drive	Control	Speeds	PRICE		WESTERN SALES REPRESENTATIVE	WESTERN DISTRIBUTORS	Nearest Point Which Repair Parts May Be Obtained
							Make	H. P.				East	West of Rockies			
Altorter Bros. Co. Peoria, Illinois	"A. B. C."	291 355	33x25	26 44	E G G	1350 2700	Wx Wx	1/6 1/6	B B	FC FC	... ...	\$145 \$125 \$165	\$155 \$135 \$175	W. E. Peters 89 E. 12th St., Portland	A. A. Wilson 612 S. Spring St., Los Angeles E. W. Murray Lighting Co. 313 Riverside Ave., Spokane Richter Sales Co. 310 Stewart St., Seattle The Electric Service Co. 175 Park St., Portland	Western Distributors
American Ironing Machine Co. 844 W. Adams St., Chicago, Ill.	"Simplex"	VM	VM	26 to 56	E G Gn	VM	....	....	B	HC	1 and 2	VM	VM	H. R. Basford Co. 180 New Montgomery St., San Francisco	H. R. Basford Co. San Francisco Fobes Supply Co. Portland, Seattle Woodill-Hulse Elec. Co. 111 E. 3rd St., Los Angeles	San Francisco
Apex Appliance Co. 3223 W. 30th St., Chicago, Ill.	"Apex"	511 526	26x54	44 48	E G Gn	3200	GE R&M Wx	1/6	G	FC	...	\$160	\$170	A. M. Smith Co., 219 W. 3rd St., Los Angeles	A. M. Smith Co., 219 W. 3rd St., Los Angeles	Los Angeles
Apex Elec. Distrib. Co. 1067 E. 152nd St., Cleveland, Ohio	"Rotarex"	325	22x60	46	E G	3000	Own	1/6	B	FC	1	\$152.50 (Cash) \$167.50 (Time)		G. A. Buckley 1405 Walnut St., Kansas City, Mo.	Apex Elec. Distrib. Co. 681 Market St., San Francisco 1437 Welton St., Denver 2011 Broadway, Oakland 1024-11th St., Sacramento 2117 Inyo St., Fresno Illinois Elec. Co. Los Angeles North Coast Elec. Co. Portland and Seattle Electrical Equip. Co. Butte, Montana Intermountain Elec. Co. Salt Lake City	Western Distributors
Barnett Foundry & Machine Co. Irvington, N. J.	"Capitol"	470	60x24	46	E G Gn	2700	....	1/6	B	FC	...	\$155	\$170			Factory
Deming Mfg. Co. 5103 Lakeside Ave. Cleveland, Ohio	"Deming"	420	63x33	46	E G	3000	Ohio	1/4	G	FC	...	\$185 \$165				
Holland Maid Co. Holland, Mich.	"Holland Maid"	280	57x24	48	E G	....	GE	1/6	G	FC HC	...	\$185	\$185			Factory
Horton Mfg. Co. Fort Wayne, Ind.	"Horton"	320	22x42	30	E G	2000	GE	1/6	B	FC	...	\$140			A. A. Wilson Los Angeles Salt Lake Hdwe Co. Salt Lake City Hexter & Co. Portland Schwabacher Hdwe Co. Seattle Holley-Mason Hdwe Co. Spokane	Factory
Hurley Machine Co. Chicago, Ill.	"Thor Automatic"	565	54x25	44 or 50	E G Gn	1500	GE or Wx	1/6	G	A	2	\$165	\$180	Hurley Machine Co., 425 Rialto Bldg., San Francisco	Pacific States Elec. Co. San Francisco, Oakland, Seattle, Portland and Los Angeles	Western Distributors
The "1900" Washer Co. Binghamton, N. Y.	"1900"	450	27x53	44	G E Gn	2500	R&M	1/10	G	FC	...	\$160	\$175	W. Lee Holmes 71 New Montgomery St., San Francisco	W. Lee Holmes 71 New Montgomery St., San Francisco	San Francisco
Sperlich & Uhlig Co. Detroit, Mich.	"Ironrite"	410	26x63	46	E G	3500	Dom	1/4	G	FC	...			J. D. Paladeux, 1244 E. Broadway, Portland		
Rainbow Appl. Mfg. Co. Rochester, N. Y.	"Rainbow"	283 328	37x20 53x20	30 46	GE GE	....	GE GE	1/6 1/6	G G	A A	1 1	\$160				Factory
Utensils Co. 303 E. Columbus St., Fort Wayne, Ind.	"Utenco"	310	1 x 42	24	E G Gn	2750	GE	1/6	G	FC A	...	\$185 \$160 \$170			Listenwaller & Gough Los Angeles West Coast Sales Co. Oakland	Los Angeles or Oakland
Western Electric Co. New York City	"Western Electric"	198	37x24	28	G	....	WE	1/10	G	FC HC	...	\$125	\$140	Western Electric Co. 650 Folsom St., San Francisco	Western Elec. Co. San Francisco, Los Angeles, Oak- land, Portland, Seattle, Tacoma, Spokane, Denver, and Salt Lake City	All Branch Office
F. B. Zieg Mfg. Co. Fredericktown, Ohio	"Buckeye"	350	24x48	46	E G Gn	2500	GE	1/6	G	FC	...	\$140	\$150		W. E. Dooley & Co. Seattle, Wash.	Seattle

ELECTRIC RADIATOR AND HEATER DIRECTORY

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A list of Electric Radiator and Heater Manufacturers giving catalog information on the equipment of each, with complete list of Western Distributing Agencies where repair parts may be secured. The publisher does not guarantee this information, but to the best of his knowledge it is correct at the date of publication. When referring to this list in any way, mention the **Journal of Electricity**.

Key to Abbreviations

B—Bronze
Br—Brass
C—Copper
Nk—Nickel
BS—Blue Steel
OI—Old Ivory
En—Enamel
Po—Portable
Pd—Pendant
St—Stationary
Fr—Fireplace
VM—Various Models

NAME OF MANUFACTURER	TRADE NAME	Dimensions in Inches	Reflector Dimen. (Inches)	FINISH		Type	HEATING ELEMENT						PRICE		WESTERN SALES REPRESENTATIVES	WESTERN DISTRIBUTORS	Nearest Point at Which Repair Parts Can Be Secured.
				Heater	Reflector		Number of Elements	Total Wattage	No. of Heats	Removable Elements	Fits Edison Socket	East	West of Rockies				
son Elec. Appliance Co., Ontario, California.	"Hedlite" (High Wattage)	20x15 VM	14 VM	B OI En	C	Po	1	630	1	Yes	Yes	..... .....	\$11.00 to \$16.50 to \$26.00 to \$56.00	Edison Elec. Appl. Co., Inc., Sales Offices & Service Sta.: Ontario, Calif., San Francisco, Los Angeles, Portland, Seattle, Salt Lake City	All Leading Jobbers.	All Sales Offices and Service Stations
e. Heatg. & Mfg. Co., Ventlake & Republican Sts., Seattle, Wash.	"Circu- Flector" "100% Radiator" "Heat-feet" "100% Radiators"	15x9 19x32 16x 30 19x16 16x 14 19x24	9 1/4 	C En	C	Po	1 3 to 6 1 to 4000 1 to 8000	660 1200 to 8000 660 4000 1200 to 8000	1 3 to 6 3 to 4000 3 to 8000	Yes No Yes No Yes No	Yes No Yes No	..... ..... \$30.00 to 60.00 \$25.00 to 80.00	\$8.00 \$20.00 to \$75.00 \$25.00 to 50.00 \$25.00 to 75.00	Elec. Htg. & Mfg. Co., Seattle	Eastern Mfrs. Co., Portland Wholesale Electric Co., San Francisco Seattle-Astoria Iron Wks., San Francisco Cumberland Lgt. & Power Co., Cumberland, B. C., Canada All Leading Jobbers	Seattle
ate Stove Co., The Hamilton, Ohio	"Estate"	17x 8	9 1/2	B	B	Po	1	660	1	Yes	No	\$7.50	\$8.00	The Estate Stove Co., Furn. Exchge. Bldg., San Francisco	The Estate Stove Co., San Francisco	Factory	
on Heat Elec. Co., 429 Canton Ave., Detroit, Mich.	"Even Heat"	17x 9	.....	En	N	Po	2	660	1	Yes	.....	\$9.50	.....	Karpp Sales Co., 1160 Pine St., San Francisco	Karpp Sales Co., San Francisco Tacoma Mercantile Co., Tacoma North West Sales Co., St. Paul, Minn.	St. Paul, Minn.
gerald Mfg. Co., The Vinsted, Conn.	"Model C" "Model D"	18x14 17x12	14 12	En En	C C	Po Po	1 1	600 600	1 1	Yes Yes	Yes Yes	..... .....	..... .....	A. S. Chernoff Co., 41 Fell St., San Francisco		San Francisco
C. Gilbert Co., The New Haven, Conn.	"Polar Cub"	13x11	11	En	C	Po	1	550	1	Yes	Yes	\$5.00	\$5.25	H. E. Iblings, 4816 Franklin Ave., Los Angeles	In all large cities.	Distributors	
ber Die & Stamping Co., Chicago, Ill.	"The Sun"	19x14	14	En	C	Po	1	575	1	Yes	Yes	\$8.50	\$8.85	H. J. Gute & Co., San Francisco R. M. Burton Sales Agcy., Alaska Bldg., Seattle Leo Rabin, 1516 S. Union Ave., L. A.		Sales Representa- tives	
Wesley Hicks, Rialto Bldg., San Francisco L. Hooper, 539 Hollywood Bldg., Los Angeles	"Wesix" "Radiant- Convection"	VM	.....	.....	.....	Po St. Fr	VM 800 to 6000	3	.....	.....	.....	\$25.00 to \$90.00	.....	W. Wesley Hicks, Mfr. and Patentee, Rialto Bldg., San Francisco M. L. Hooper, Los Angeles	All Jobbers	San Francisco
nders, Frary & Clark, New Britain, Conn.	"Universal" and "Thermax"	14x11 and 18x14	11 and 14	.....	.....	Po	1	625	1	Yes	Yes	\$.50 to \$11.50	\$.50 to \$11.50	Landers, Frary & Clark 335 New Call Bldg., San Francisco	Electric Appliance Co., San Francisco The Electric Corp., Los Angeles, Seattle, Portland	Service Stations, San Francisco, Los Angeles, Seattle
jestic Elec. Appl. Co., Inc., 90 Folsom St., San Francisco	"Majestic" "Radiant" "Radiant- Convection"	16x12 19x14 15x15 19x14 17x22 17x8 9x35	11 1/2 12 1/2 12 1/2 12 1/2	En En Nk En B Br C	C C C C	Po Po Po Po St Fr St	1 1 2 2 4000	615 615 760 960 2000 4000	1 1 1 1 3	Yes Yes Yes No No No No	Yes Yes No No No No No	\$9.50 \$10.50 \$25.00 \$13.50 \$40.00 to \$115.00	\$9.50 \$10.50 \$25.00 \$13.50 \$40.00 to \$115.00	Majestic Elec. Appl. Co., San Francisco	All Jobbers	Jobbers	
Plaut & Co., 32 E. 23rd St., New York City	"Double Ray"	7x8	8 1/2	Br	C	Po	.....	600	1	Yes	Yes	\$8.50	\$8.50	Ralph A. Ryan 417 Montgomery St., San Francisco	Reiman Whse. Elec. Co., Los Angeles	New York City
metheus Elec. Co., 11-W. 42nd St., New York City	"Prometheus"	18x3	.....	B	.....	Po	5	1000	3	Yes	No	\$25.50	\$25.50	M. E. Hammond, Pacific Bldg., San Francisco		New York City
sell Electric Co., 40 W. Huron St., Chicago, Ill.	"Hold Heat"	15 1/2 x 12	12 1/2	En	C	Po	1	660	1	Yes	Yes	\$7.50	\$7.50	W. H. Carter, 1245 Broadway, San Francisco	North Coast Elec. Co., Seattle, Tacoma, Portland United Elec. Supply Co., S. L. C. B. & R. Supply Co., Denver Listonwelter & Gough, Los Angeles and San Francisco Dunham, Carrigan and Hayden, San Francisco	Jobbers Stock	
tenber Elec. Co., Marion, Ind.	"Marion"	18x13	11 1/2	En	C	Po	1	615	1	Yes	No	\$10.00	\$10.00	Atlantic-Pacific Sales Co., 646 Mission St., San Francisco	Atlantic-Pacific Sales Co., San Francisco	San Francisco	
reeline Mfg. Co., 6 Tehama St., San Francisco	"Hulbert"	VM	.....	.....	.....	VM	VM	660 to 6600	.....	.....	.....	..... \$35 to \$250	.....	Scheeline Mfg. Co., San Francisco		San Francisco
plex Elec. Heatg. Co., 5 Sidney St., Cambridge, Mass.	"Sunbowl" "Sunbowl Jr."	20x14 13x11	14 10 1/2	En En	C C	Po Po	1 1	600 100	1 1	Yes Yes	No No	\$11.00 \$7.00	\$11.00 \$7.00	P. B. Miller, 137 5th St., San Francisco	Universal Elec. Co., S. F. Reiman Whse. Elec. Co., L. A. Marshall-Wells Hardware Co., Portland, Ore. Whiton Hardware Co., Seattle	Distributors	

ELECTRIC RADIATOR AND HEATER DIRECTORY
(CONTINUED)

Key to Abbreviations														Key to Abbreviations											
B—Bronze Br—Brass C—Copper														Nk—Nickel BS—Blue Steel OI—Old Ivory				En—Enamel Po—Portable Pd—Pendant				St.—Stationary Fr—Fireplace VM—Various Models			
NAME OF MANUFACTURER	TRADE NAME	Dimensions in Inches	Reflector Dimen. (Inches)	FINISH			Type	HEATING ELEMENT					PRICE		WESTERN SALES REPRESENTATIVES	WESTERN DISTRIBUTORS	Nearest Point at Which Repair Parts Can Be Secured.								
				Heater	Reflector			Number of Elements	Total Wattage	No. of Heats	Removable Elements	Fits Edison Socket	East	West of Rockies											
Sparling Elec. Prod. Co. 2 Letchworth St., Buffalo, N. Y.	"Hot Glow"	20x20 30x30	.....	.....	C	Fr	3	1400	3	.....	No	.....	.....	Regan & Koehler, 240 Rialto Bldg., San Francisco P. C. Koehler, 1207 Washington Bldg., Los Angeles						
Strait & Richards, Inc. Fabyan Place, Newark, N. J.	"Gloglog"	16 20 24 30	.....	Oak Logs	.....	Fr	2	2000 2000 2000 3000	2	Yes	.....	\$30.00 35.00 40.00 50.00	\$35.00 40.00 45.00 55.00	Atlantic & Pacific Agencies Corp., Rialto Bldg., San Francisco	Atlantic & Pacific Agencies Corp., San Francisco Globe Elec. Sup. Co., 1843 Wazee St., Denver, Colo.	San Francisco						
Westinghouse Elec. & Mfg. Co. 1st Natl. Bank Bldg., San Francisco	"Cozy Glow" "Cozy Glow Jr." "Solar Glow"	18x14 14x11 20x 19 1/2	B B B	En B C	C Po Po	Po	1	660 660 2000	1 1 3	Yes Yes Yes	Yes Yes No	\$10.50 6.50 37.50	\$10.50 6.50 37.50	Fobes Supply Co., San Francisco Portland, Seattle, Oakland Illinois Elec. Co. Los Angeles	Westinghouse Agent Jobbers	Jobbers & Dealers									
	"D" Air Heaters	16x12 12x 13 1/2 20x 13 1/2 27x 13 1/2	.....	En En En	.....	St Po Po	1 1 2 3	1200 1000 2000 3000	1 3 3 3	Yes Yes Yes	No No No	25.00 18.00 24.00 30.00	25.00 18.00										
Westinghouse Elec. & Mfg. Co. 1st. Natl. Bank Bldg., San Francisco	"Cozy Glow"	18x14	B	En	C	Po	1	6.0	1	Yes	Yes	\$10.50	\$10.50	Fobes Supply Co. San Francisco, Portland, Seattle, Oakland Illinois Elec. Co. Los Angeles	Westinghouse Agent Jobbers	Jobbers & Dealers									
Xardell Corp. Utica, N. Y.	"A-Little- Warmer"	18x10	.....	Nk	.....	Po	1	660	1	.....	.....	\$7.50	\$7.50			Factory					

VACUUM CLEANER DIRECTORY

Published and Copyrighted by the Journal of Electricity, October 15, 1924.

A list of vacuum cleaner manufacturers giving catalog information on the equipment of each, with complete list of Western distributing agencies, as well as points where repair parts may be secured. The publisher does not guarantee this information, but to the best of our knowledge and belief it is correct at date of publication. When referring to this list in any way, mention the Journal of Electricity.

Key to Abbreviations				Sh—switch on handle Sc—switch on cord Sm—switch on motor Sf—switch on frame				R—rotating Rg—gear driven Rs—shaft drive Re—chain drive				Bm—belt to motor Bw—belt to wheels S—stationary V—vertical mounted				H—horizontal mounted GE—General Elec. Co. Dom—Domestic Elec. Co. R&M—Robbins & Myers				Wx—Westinghouse Berco—Birtman Elec. Co. t—eastern price plus freight *—price includes attachments			
MANUFACTURER	TRADE NAME	Weight (in lbs.)	Style	Brush	MOTOR			Switch Control	RETAIL PRICE				WESTERN SALES REPRESENTATIVE	WESTERN DISTRIBUTORS	Nearest Point At Which Repair Parts May Be Secured.								
					Make	H.P.	Mounted		Attachments	Cleaner													
										East	West	East				West							
Apex Electrical Mfg. Co., 1067 E. 152nd St., Cleveland, Ohio	"Apex"	10 1/2	SW	ST	Own	1/12	H	Sh	7	\$10.00	\$11.00	\$65.00	\$63.50	G. A. Buckley, 1405 Walnut St., Kansas City, Mo.	Fobes Supply Co., Seattle, Portland Illinois Elec. Co., Los Angeles Elect. Equip. Co., Butte Intermountain Elec. Co., Salt Lake City	Distributors							
Birtman Electric Co., Lake & Desplaines Sts., Chicago, Ill.	"Magnetic Housecleaner"	12 1/2	SW	S	Berco	1/6	H	Sh	6	.....	.....	\$76.00	\$76.00	H. J. Gute, Division Mgr., 150 Post St., San Francisco	H. J. Conrad, 317 No. Oxford St., Los Angeles Chas. H. Hanke, 150 Post St., San Francisco J. B. Howell, Berkeley C. M. Mackenzie, 1507 Cabrillo, Torrance, Calif. L. A. MacLean, Oakland Thos. P. Reid, San Diego	San Francisco					
	"Bee-Vac"	11	SW	S	Berco	1/6	H	Sh	5	.....	.....	\$39.75	\$39.75	H. J. Gute & Co., 150 Post St., San Francisco J. F. Kitchen, 1325 So. Harvard Blvd., Los Angeles	Through Leading Jobbers	San Francisco and Los Angeles					
Clements Mfg. Co., 601 Fulton St., Chicago, Ill.	"Cadillac"	12	SW	S	Own	1/4	H	Sh	7	\$10.00	\$12.50	\$55.00	\$60.00	S. F. Compressed Air Co., San Francisco, Los Angeles	F. E. Spencer, 733 W. 8th St., Los Angeles Heyman-Weil Co., San Francisco Ray Bentley, 219 Worcester Bldg., Portland	From any distributor.							
The F. Bissell Co., 812 Lafayette St., Toledo, Ohio	"Bissell New HomeCleaner"	12 1/2	SW	.....	Own	.....	H	Sh	8	.....	.....	.....	.....	Shirey-Hilmer, 324 13th St., Oakland	Same	The F. Bissell Co., Toledo, Ohio	
	"Bissell Super-Service"	25	SW	.....	Own	1/3	H	Sm	7	.....	.....	.....	.....		A. S. Kedzie, 737 Terminal St., Los Angeles	San Francisco and Los Angeles		
	"Bissell School"	25	SW	.....	Own	1/3	H	Sm	8	.....	.....	.....	.....						
The Eclipse Machine Co., Sidney, Ohio	"Eclipse"	10	SW	Rg	GE	.....	V	Sh	7	.....	.....	\$45.00	\$50.00	Sprake Sales Co., Inc., American Bank Bldg., Los Angeles	Same	Sprake Sales Co., Los Angeles and th branches.				
Edison Elec. Appliance Co., 5600 Taylor St., Chicago, Ill.	"Hotpoint"	11	SW	S	GE	1/5	H	Sh	8	\$10.00	t	\$49.50	t	P. H. Booth, District Sales Mgr., Ontario, Calif. B. E. Rowley, District Sales Mgr., 60 East First South St., Salt Lake City		Ontario, Calif. 155 New Montgomery St., San Francisco 1526-8th Ave., Seattle 10 No. Broadway, Portland 60 East First South St., Salt Lake City							

VACUUM CLEANER DIRECTORY

(CONTINUED)

Key to Abbreviations
SW—sweeper type
TR—truck type
ST—stationary type

Sh—switch on handle
Sc—switch on cord
Sm—switch on motor
Sf—switch on frame

R—rotating
Rg—gear driven
Rs—shaft drive
Rc—chain drive

Bm—belt to motor
Bw—belt to wheels
S—stationary
V—vertical mounted

H—horizontal mounted
GE—General Elec. Co.
Dom—Domestic Elec. Co.
R&M—Robbins & Myers

Wx—Westinghouse
Berco—Birtman Elec. Co.
t—eastern price plus freight
*—price includes attachments

MANUFACTURER	TRADE NAME	Weight (in lbs.)	Style	Brush	MOTOR				Switch Control	Attachments	RETAIL PRICE				WESTERN SALES REPRESENTATIVE	WESTERN DISTRIBUTORS	Nearest Point At Which Repair Parts May Be Secured.
					Make	H.P.	Mounted	Type			Attachments		Cleaner				
											East	West	East	West			
Ac. Vacuum Cleaner Co., Ivanhoe Road, Cleveland, Ohio	"Premier Duplex" "Handy"	124 64	SW S	Bm S	GE type	1/10 1/8	H H	Sh H	8 6	\$10.00	\$11.00	\$60.00	\$65.00	J. J. James, 236 So. Los Angeles St., L. A. Chas. A. Pearl, 61 Fifth St. No., Portland, Oregon	Pacific States Electric Co., San Francisco Capital Electric Co., Salt Lake City	Pacific States Elect. Co., San Francisco, Los Angeles	
Eureka Vacuum Cleaner Co., Hamilton & Dewey Aves., Detroit, Mich.	"Eureka"	11	SW	S	Own	1/5	H	Sh	5	.....	.....	\$45.00	\$55.00	Eureka Vacuum Cleaner Co., 128 Post St., San Francisco	Woodill Hulse Elec. Co., Los Angeles Poole Electric Co., 1206-4th Ave., Seattle Eureka Vacuum Cleaner Co., 162 S. Post St., Spokane	From Factory Branch or from any Distributor.
Federal Electric Co., 3700 So. State St., Chicago, Ill.	"Federal"	11	SW	Re	Own	1/6	V	Sh	6	\$8.00	\$8.50	\$55.00	\$55.00	Federal Electric Co., 91 New Montgomery St., San Francisco	Same	All Pacific Coast Job- bing Points.	
P. A. Geier Co., 540 East 105th St., Cleveland, Ohio	"Royal"	11	SW	S	Dom	.....	H	Sh	8	\$10.00	\$13.50	\$55.00	\$60.00	..... ..... .....	J. G. Creighton Co., 53-4th St., Portland Listenwaller & Gough, Inc., 819 E. 1st St., Los Angeles 940 Mission St., San Francisco	From any distributor.
Hamilton Beach Mfg. Co., 501 Rapids Drive, Racine, Wis.	"Hamilton Beach"	15	SW	Bm R	Own	1/5	H	Sh	8	\$13.00	.....	\$62.50	\$64.00	Hamilton Beach Mfg. Co., Racine, Wis.	Sold direct to Dealers.	H. L. Hudson, 378 O'Farrell St., S. F. Gans Bros., 141 S. Main St., Los Angeles
Hoover Co., North Canton, Ohio	"Hoover" Model 103 Model 541 Model 961	164 154 301	SW SW SW	Bm Bm Bm	Own Own GE	.08 .09 .17	V V V	Sm Sm Sm	7 7 7	\$12.50 \$12.50 \$15.00	\$13.50 \$13.50 \$16.50	\$52.50 \$65.00 \$150	\$60.00 \$74.00 \$160	H. G. Glass, Geary & Leavenworth Sts., San Francisco	..... ..... .....	San Francisco San Francisco San Francisco
Hurley Machine Co., 2nd St. & 54th Ave., Chicago, Ill.	"Hurley- Thor"	154	SW	Rs	GE	1/7	V	Sh	8	\$12.50	\$12.50	\$65.00	\$70.00	Hurley Machine Co., J. W. Ferry, 425 Rialto Bldg., San Francisco	Thor Shops 154-5th St., Portland 222 Pine St., Seattle 124 Post St., San Francisco 306 W. 7th St., Los Angeles Fox Theatre Bldg., Oakland	Thor Shops	
Kent Co., Inc., 83 W. Dominick St., Rome, N. Y.	"Kent Vacuna"	32, 48, & 72	TR & ST	S	Wx	1/5 & up	V	Sf	10 & up	.....	.....	\$130 & up	\$130 & up	Illinois Electric Co., Los Angeles F. A. Tanner, 77 O'Farrell St., San Francisco	.....	Rome, N. Y.
Landers Frary & Clark, New Britain, Conn.	"Universal"	12	SW	.....	Dom GE WX	1/8	H	Sh	7	\$10.00	\$10.00	\$49.50	\$57.50	Landers Frary & Clark, 335 New Call Bldg., San Francisco	Through Jobbers Universal Service Station	San Francisco, Los Angeles, Seattle
S. Wright Co., 64 Fremont St., Worcester, Mass.	"Sweeper- Vac"	15	SW	R & Rg	Dom	1/5	H	Sh	7	\$10.50	\$11.00	\$57.50	\$60.00	F. W. Biven, 362 Jayne Ave., Oakland	Schleuter Commercial Co., 1175 Market St., San Francisco A. Schleuter & Co., Oakland A. A. Wilson, Los Angeles Sloat Wholesale Co., Portland, Ore.	.....
Regina Corp., Shaw, N. J.	"Regina Electric Home Cleaning Machine"	12	SW	S	GE	1/9	.....	Sh	8	.....	.....	\$69.75	\$69.75	The Regina Corp., 589-13th St., Oakland, Calif. Also Los Angeles, San Bernardino, Santa Ana, California.	.....	Oakland, Los Angeles, San Bernardino, Santa Ana.
F. Sturtevant Co., Lyde Park, Boston, Mass.	"Sturtevant"	25 to \$6	TR	S	.....	1/6 to 3	H	Sc	4 to 8	\$33.00 & up	.....	\$125 to \$1122	.....	.....	B. F. Sturtevant Co., San Francisco, Los Angeles, Port- land, Seattle.	.....
Torrington Company, Torrington, Connecticut	"Torrington"	124	SW	R	GE	1/5	H	Sh	9	.....	\$13.00	.....	\$65.00	W. H. Johnson & Co., 938 Mission St., San Francisco	.....	San Francisco
McClung Mfg. Co., Sunshine Sales Co., New Philadelphia, Ohio	"Sunshine"	114	SW	S	WX	1/4	H	Sh	6	.....	.....	.....	.....	.....	United Vacuum Cleaner Stores, Main Office, Fresno, Calif. Mine & Smelter Supply Co., Denver, Colo. and Salt Lake City Elec. Service Co., 181 Broadway, Port- land and 702 Pine St., Seattle	Fresno, Denver, Salt Lake City, Portland Seattle
Wise McClung Mfg. Co., New Philadelphia, Ohio	"America"	114	SW	Bw	Arrow	1/8	V	Sf	6	.....	.....	.....	\$65.00	C. E. MacNichols, 203-14th Ave. N., Seattle, Wash.	Manufacturers Rep. Co., 74 New Montgomery St., S. F. So. Cal. Appl. Co., Los Angeles Salt Lake Hdwe. Co., Salt Lake Elec. Service Co., Portland, Seattle Burghardt & Hauff Elec. Co., 1007-1st Ave., Seattle Salt Lake Hdwe. Co., Salt Lake City	San Francisco Los Angeles Salt Lake City Portland Seattle
	"Columbia"	114	SW	Bw	Arrow	1/5	V	Sh	6	.....	.....	.....	\$70.00	Manufacturers Representatives Co., San Francisco and Los Angeles	Manufacturers Representatives Co., San Francisco and Los Angeles Getz Washer Sales, Los Angeles	San Francisco and Los Angeles
S. Wright Co., Worcester, Mass.	"Western Electric"	15	SW	Bm	Dom	1/5	H	Sh	6	\$11.50	\$12.50	\$57.50	\$60.00	Western Electric Co.	Western Electric Co., San Francisco, Los Angeles, Seattle, Portland, Denver, Salt Lake City	All offices.	

ELECTRIC RANGE DIRECTORY Published and Copyrighted by the Journal of Electricity, October 15, 1924.

A list of Electric Range Manufacturers giving catalog information on the equipment of each with list of Western Distributing Agencies where repair parts may be secured. The publisher does not guarantee this information but to the best of his knowledge it is correct as the date of publication. When referring to this list in any way mention the Journal of Electricity.

Ad

HEATING UNITS																					
NAME OF MANUFACTURER	TRADE NAME	Model or Catalog No.	Type of Unit O—Open C—Enclosed	DIMENSIONS				WATTAGE				Temperature Control A—Thermostat C—Clock Oven B—Electric C—Cabinet L—Low	Retail Price	WESTERN SALES REPRESENTATIVE	WESTERN DISTRIBUTORS	Nearest Point at Which Repair Parts May be Secured					
				SURFACE			OVEN	SURFACE			OVEN										
				Large	Medium	Small	Simmerer	Oven	Broiler	Total Watts	Surface Units										
Edison Elec. Appliance Co., Chicago, Ill.	"Hotpoint" Hughes	RS-67	O	28 1/2 x 52 1/2	18 x 18 1/4 x 8 1/4	6 1/2	6 1/2	6 1/2	2-12 x 12	1500	1000	1000	4500	2-1500	7500	AC	Edison Elec. Appl. Co., Ontario, Cal.	All sales offices			
		R-67		28 1/2 x 52 1/2	18 x 18 1/4	"	"	"	4-12 x 12	"	"	"	6500	4-1500	12500	"	Los Angeles, Equitable Bldg., First and Spring Sts.				
		R-70		28 1/2 x 52 1/2	18 x 18 1/4	"	"	"	12 x 12	"	"	"	1000	4500	1500	9000	"	San Francisco, 155 New Montgomery St.			
		R-63		28 1/2 x 52 1/2	18 x 18 1/4	"	"	"	"	"	"	"	3500	1500	6500	7500	"	Portland, 10 North Broadway			
		R-85		28 1/2 x 28 1/4	18 x 18 1/4	"	"	"	"	"	1000	"	1000	4500	1200	5400	"	Seattle, 1526 Eighth Ave.			
		R-87		25 x 44	16 x 12 x 15	6 1/2	6 1/2	6 1/2	9 x 12	1500	1000	1000	4500	2-1500	7500	AC	San Lake City, 60 East First St., South				
		R-101		21 1/2 x 37 1/4	18 x 18 1/4 x 8 1/4	6 1/2	6 1/2	6 1/2	2-12 x 12	"	"	"	6500	4-1500	12500	"					
		R-105		21 1/2 x 37 1/4	18 x 18 1/4	"	"	"	"	"	"	"	3500	1500	6500	7500	"				
		R-67		28 1/2 x 52 1/2	18 x 18 1/4	"	"	"	"	"	"	"	3000	1200	5400	7500	"				
		RA-67		28 1/2 x 52 1/2	18 x 18 1/4	"	"	"	"	"	"	"	4500	1500	7500	7500	"				
Electrolux Appliances, Incl., 301 Fifth Ave., South Minneapolis, Minn.	"Electrolux"	B-57	O	25 x 43 1/2	15 x 15 x 10	7 1/2	7 1/2	7 1/2	10 x 15	1500	1000	4500	1500	1500	7500	C	R. M. Burton Alaska Bldg., Seattle	Seattle and San Francisco			
		184	C	50 1/2 x 26	18 x 18 x 12	8 1/2	7	7	16 1/2 x 17 1/2	1250	800	3650	3300	1500	9650	E	The Estate Stove Co., 839 Mission St., San Francisco	Factory			
		E-184	"	50 1/2 x 26	18 x 18 x 12	8 1/2	7	7	16 1/2 x 17 1/2	1250	800	3650	3300	1500	9650	E					
		188	"	50 1/2 x 25	18 x 18 x 12	"	"	"	16 1/2 x 17 1/2	1250	800	3650	3300	1500	7800	E					
		76	"	40 x 23	16 1/2 x 17 x 12	"	"	"	15 1/2 x 16 1/2	1250	800	2850	3000	1300	6500	E					
		181	"	53 x 26	18 x 18 x 12	"	"	"	16 1/2 x 17 1/2	1250	800	3650	3300	1500	7800	L					
		E-181	"	53 x 26	18 x 18 x 12	"	"	"	16 1/2 x 17 1/2	1250	800	3650	3300	1500	7800	L					
		179	"	66 x 28	18 x 18 x 12	"	"	"	16 1/2 x 17 1/2	1250	800	3650	3300	1500	7800	L					
		H-283	"	29 x 16	18 x 12 x 12	"	"	"	11 1/2 x 17 1/2	1250	800	2850	2400	1000	5900	L					
		180	"	40 x 26	18 x 18 x 12	"	"	"	16 1/2 x 17 1/2	1250	800	3650	3300	1500	7800	L					
Landers, Frary & Clark, New Britain, Conn.	"Universal"	E-180	"	40 x 26	18 x 18 x 12	"	"	"	16 1/2 x 17 1/2	1250	800	3650	3300	1500	7800	L					
		H-78	"	28 3/4 x 18	12 x 11 x 17 1/8	6 1/2	6 1/2	6 1/2	11 1/2 x 10 1/2	1100	650	1750	1750	775	4250	E					
		E-81	C	27 x 43 1/2	14 x 14 x 10 3/4	8 3/4	"	"	"	1500	1000	4500	2000	1500	8000	E	Landers, Frary & Clark, 335 New Call Bldg., San Francisco	Electric Appliance Co., The Elec Corporation Los Angeles, Seattle and Portland Marshall-Wells, Portland, Ore.	Universal Service Stations San Francisco Los Angeles Seattle		
		E-92	"	"	"	"	"	"	"	"	"	"	660	4160	"	7600	"				
		E-95	"	"	"	"	6 1/2	6 1/2	6 1/2	"	"	"	"	"	"	8210	"				
		E-86	"	"	"	"	"	"	"	"	"	"	"	"	"	7000	"				
		E-83	"	"	"	"	"	"	"	"	"	"	"	"	"	16500	"				
		E-94	"	"	"	"	"	"	"	"	"	"	"	"	"	7500	"				
		E-90	"	27 x 29	16 x 16	6 1/2	6 1/2	6 1/2	16 1/2 x 17 1/2	1250	800	3650	3300	1500	7800	"	15000	"			
		E-98	"	27 x 23 3/4	16 x 16	6 1/2	6 1/2	6 1/2	16 1/2 x 17 1/2	1250	800	3650	3300	1500	7800	"	15000	"			
A. J. Lindemann & Hoverson Co., Milwaukee, Wis.	L & H Electric Both Full and Semi Porcelain Enamel	830	O	49 x 26 1/2	18 x 14 x 18 3/8	7 1/2	6	6	13 1/2 x 11	1750	1250	800	3800	3000	1800	8600	C	P. F. Ross Harry W. Lippert, Room 245, Rialto Bldg., San Francisco	Alexander & Lovenson, 926 Howard St., San Francisco	Manufacturers Warehouse, 316 Minnesota Street, San Francisco Oregon Transfer Co., Portland, Ore. Los Angeles Warehouse Co., Los Angeles, Cal. Taylor-Edwards Co.,	
		831	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"			
		832	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"			
		810	"	49 x 26 1/2	18 x 14 x 18	"	"	"	13 1/2 x 11	"	"	"	"	3300	"	7100	AC	Burton R. Stare Co., 619 Fourth Ave., Seattle, Wash.	Burton R. Stare Co., 619 Fourth Ave., Seattle, Wash.	Portland, Ore. Warehouse Co., Los Angeles, Cal.	
		811	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"			
		812	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"			
		805	"	42 x 23 1/2	16 x 12 x 18 7 1/8	"	"	"	7 1/2 x 13	1500	"	"	4500	2500	"	7000	AC	Barker Bros., Los Angeles, Cal.	Barker Bros., Los Angeles, Cal.	Los Angeles, Cal.	
		805	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"			
		801	"	33 x 18	14 x 18 x 8	7 1/2	6	6	7 1/2 x 13	1750	1250	800	3800	3000	1800	8600	AC				

Magee Furnace Co., Boston, Mass.	"Electric- Coal" "Electric Alliance"	2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012	C	43" x 26 1/2" 43" x 26 1/2" 43" x 26 1/2" 43" x 26 1/2" 43" x 26 1/2" 43" x 26 1/2" 43" x 26 1/2" 43" x 26 1/2" 43" x 26 1/2" 43" x 26 1/2" 43" x 26 1/2" 43" x 26 1/2"	33 33 33 33 33 33 33 33 33 33 33 33	16x12x13 16x12x13 16x12x13 16x12x13 16x12x13 16x12x13 16x12x13 16x12x13 16x12x13 16x12x13 16x12x13 16x12x13	9 9 9 9 9 9 9 9 9 9 9 9	7 7 7 7 7 7 7 7 7 7 7 7	1500 1500 1500 1500 1500 1500 1500 1500 1500 1500 1500 1500	3500 3500 3500 3500 3500 3500 3500 3500 3500 3500 3500 3500	1500 1500 1500 1500 1500 1500 1500 1500 1500 1500 1500 1500	6500 6500 6500 6500 6500 6500 6500 6500 6500 6500 6500 6500	E "A" "A" "A" "A" "A" "A" "A" "A" "A" "A" "A" "A"	\$550.00 450.00 440.00 440.00 440.00 440.00 440.00 440.00 440.00 440.00 440.00 440.00	The T. G. Arrowsmith Co., 135 New Montgomery St., San Francisco	Dealers and Central Stations	San Francisco		
Geo. D. Roper Corp., Rockford, Ill.	"Roper"	2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012	C	43" x 26 1/2" 43" x 26 1/2" 43" x 26 1/2" 43" x 26 1/2" 43" x 26 1/2" 43" x 26 1/2" 43" x 26 1/2" 43" x 26 1/2" 43" x 26 1/2" 43" x 26 1/2" 43" x 26 1/2" 43" x 26 1/2"	32 30 33 33 29 22 22 22 22 22 22 22	16x16x13 16x16x13 16x16x13 16x16x13 16x16x13 16x16x13 16x16x13 16x16x13 16x16x13 16x16x13 16x16x13 16x16x13	8 1/2 8 1/2 8 8 8 8 8 8 8 8 8 8 8	7 7 7 7 7 7 7 7 7 7 7 7	1500 1500 1500 1500 1500 1500 1500 1500 1500 1500 1500 1500	4800 4800 4800 4800 4800 4800 4800 4800 4800 4800 4800 4800	1100 1100 1100 1100 1100 1100 1100 1100 1100 1100 1100 1100	7500 7500 7500 7500 7500 7500 7500 7500 7500 7500 7500 7500	"A" "A" "A" "A" "A" "A" "A" "A" "A" "A" "A" "A"	"A" "A" "A" "A" "A" "A" "A" "A" "A" "A" "A" "A"	C. B. Babcock Co., San Francisco P. B. Taylor, Marsh Strong Bldg., Los Angeles	Dealers and Central Stations	San Francisco		
Rathbone, Sard & Co., Aurora, Illinois	"Acorn"	E-61-5 E-61-HE E-61-HE E-61-HE E-61-HE E-61-HE E-61-HE E-61-HE E-61-HE E-61-HE E-61-HE E-61-HE	E	20 x 44 20 x 44 20 x 44 20 x 44 20 x 44 20 x 44 20 x 44 20 x 44 20 x 44 20 x 44 20 x 44 20 x 44	55 55 55 55 55 55 55 55 55 55 55 55	18x14x16 18x14x16 18x14x16 18x14x16 18x14x16 18x14x16 18x14x16 18x14x16 18x14x16 18x14x16 18x14x16 18x14x16	8 8 8 8 8 8 8 8 8 8 8 8	7 7 7 7 7 7 7 7 7 7 7 7	2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000	4400 4400 4400 4400 4400 4400 4400 4400 4400 4400 4400 4400	3000 3000 3000 3000 3000 3000 3000 3000 3000 3000 3000 3000	1500 1500 1500 1500 1500 1500 1500 1500 1500 1500 1500 1500	8900 8900 8900 8900 8900 8900 8900 8900 8900 8900 8900 8900	E "A" "A" "A" "A" "A" "A" "A" "A" "A" "A" "A" "A"	E "A" "A" "A" "A" "A" "A" "A" "A" "A" "A" "A" "A"	M. S. Barnett, 180 New Montgomery St., San Francisco F. D. Barnett, Portland and Salt Lake City	Dealers and Central Stations	Portland, Ore.	
Rutenber Elec. Co., Inc., Marion, Ind.	"Marion"	D-90 126 135 135 135 135 135 135 135 135 135 135	O	22 x 36 18 x 24 22 x 36 22 x 36 22 x 36 22 x 36 22 x 36 22 x 36 22 x 36 22 x 36 22 x 36 22 x 36	34 34 34 34 34 34 34 34 34 34 34 34	12x12x12 18x14x14 18x14x14 18x14x14 18x14x14 18x14x14 18x14x14 18x14x14 18x14x14 18x14x14 18x14x14 18x14x14	8 8 8 8 8 8 8 8 8 8 8 8	7 7 7 7 7 7 7 7 7 7 7 7	1400 1400 1400 1400 1400 1400 1400 1400 1400 1400 1400 1400	600 600 600 600 600 600 600 600 600 600 600 600	1320 1320 1320 1320 1320 1320 1320 1320 1320 1320 1320 1320	2380 2380 2380 2380 2380 2380 2380 2380 2380 2380 2380 2380	2500 2500 2500 2500 2500 2500 2500 2500 2500 2500 2500 2500	7500 7500 7500 7500 7500 7500 7500 7500 7500 7500 7500 7500	"A" "A" "A" "A" "A" "A" "A" "A" "A" "A" "A" "A"	"A" "A" "A" "A" "A" "A" "A" "A" "A" "A" "A" "A"	Atlantic-Pacific Sales Co., 646 Mission St., San Francisco	Dealers and Central Stations	San Francisco
Simplex Elec. Heating Co., 85 Sidney St., Cambridge 39, Mass.	"Simplex"	25 26 27 27 29 29 29 29 29 29 29 29	C	30 x 22 34 x 15 34 x 15 34 x 15 34 x 15 34 x 15 34 x 15 34 x 15 34 x 15 34 x 15 34 x 15 34 x 15	32 34 34 34 34 34 34 34 34 34 34 34	18x17x11 18x13x13 18x13x13 18x13x13 18x17x11 18x17x11 18x17x11 18x17x11 18x17x11 18x17x11 18x17x11 18x17x11	8 8 8 8 8 8 8 8 8 8 8 8	7 7 7 7 7 7 7 7 7 7 7 7	1200 1200 1200 1200 1200 1200 1200 1200 1200 1200 1200 1200	3600 3600 3600 3600 3600 3600 3600 3600 3600 3600 3600 3600	1200 1200 1200 1200 1200 1200 1200 1200 1200 1200 1200 1200	2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000	6800 6800 6800 6800 6800 6800 6800 6800 6800 6800 6800 6800	L "A" "A" "A" "A" "A" "A" "A" "A" "A" "A" "A" "A"	L "A" "A" "A" "A" "A" "A" "A" "A" "A" "A" "A" "A"	P. B. Miller, 137 5th St., San Francisco Hobbs, Merrill & Stetson, San Francisco Reiman White Elec. Co., Los Angeles Marshall Wells Co., Portland	Dealers and Central Stations	Distributors	
Standard Electric Stove Co., Toledo, Ohio	"Standard"	756 629 939 428-4 421 850 921 923 951	O	26 x 50 24 x 34 24 x 34 24 x 34 24 x 34 24 x 34 24 x 34 24 x 34 24 x 34 24 x 34 24 x 34 24 x 34	61 61 61 61 61 61 61 61 61 61 61 61	18x14x16 18x14x16 18x14x16 18x14x16 18x14x16 18x14x16 18x14x16 18x14x16 18x14x16 18x14x16 18x14x16 18x14x16	8 8 8 8 8 8 8 8 8 8 8 8	7 7 7 7 7 7 7 7 7 7 7 7	1200 1200 1200 1200 1200 1200 1200 1200 1200 1200 1200 1200	3600 3600 3600 3600 3600 3600 3600 3600 3600 3600 3600 3600	1200 1200 1200 1200 1200 1200 1200 1200 1200 1200 1200 1200	2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000	6800 6800 6800 6800 6800 6800 6800 6800 6800 6800 6800 6800	"A" "A" "A" "A" "A" "A" "A" "A" "A" "A" "A" "A"	"A" "A" "A" "A" "A" "A" "A" "A" "A" "A" "A" "A"	W. M. Swartz, Los Angeles Listewalter & Gough, Wood-Hulse Elec. Co., Los Angeles	Dealers and Central Stations	Distributors	
H. G. Weeks Mfg. Co., The Hamilton, Ohio	"Weeks"	52 44 44 46 926 S-641 C-111 C-105 C-354 434	O	23 x 16 24 x 17 24 x 17 24 x 17 24 x 17 24 x 17 24 x 17 24 x 17 24 x 17 24 x 17 24 x 17 24 x 17	35 35 35 35 35 35 35 35 35 35 35 35	16x10x9 16x14x12 16x14x12 16x14x11 16x14x11 16x18x12 16x18x12 16x18x12 16x18x12 16x18x15 16x18x15 16x18x15	7 7 7 7 7 7 7 7 7 7 7 7	7 7 7 7 7 7 7 7 7 7 7 7	440 440 440 440 440 440 440 440 440 440 440 440	880 2400 2400 3000 3000 3000 3000 3000 3000 3000 3000 3000	1100 1200 1200 1500 1500 1500 1500 1500 1500 1500 1500 1500	3080 4800 4800 6000 6000 6000 6000 6000 6000 6000 6000 6000	L "A" "A" "A" "A" "A" "A" "A" "A" "A" "A" "A" "A"	L "A" "A" "A" "A" "A" "A" "A" "A" "A" "A" "A" "A"	T. G. Arrowsmith Co., 135 New Montgomery St., San Francisco	Dealers and Central Stations	San Francisco		
Walker & Pratt Mfg. Co., Boston, Mass.	"Crawford"	18-70 18-70 18-60 18-60 18-60 18-60 18-60 18-60 18-60 18-60 18-60 18-60	O	26 x 49 1/2 26 x 28 1/2 26 x 28 1/2 26 x 28 1/2 26 x 28 1/2 26 x 28 1/2 26 x 28 1/2 26 x 28 1/2 26 x 28 1/2 26 x 28 1/2 26 x 28 1/2 26 x 28 1/2	32 32 32 32 32 32 32 32 32 32 32 32	18x17x13 18x17x13 18x17x13 18x17x13 18x17x13 18x17x13 18x17x13 18x17x13 18x17x13 18x17x13 18x17x13 18x17x13	8 8 8 8 8 8 8 8 8 8 8 8	7 7 7 7 7 7 7 7 7 7 7 7	2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000	1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000	5000 5000 5000 5000 5000 5000 5000 5000 5000 5000 5000 5000	2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000	7000 7000 7000 7000 7000 7000 7000 7000 7000 7000 7000 7000	E "A" "A" "A" "A" "A" "A" "A" "A" "A" "A" "A" "A"	E "A" "A" "A" "A" "A" "A" "A" "A" "A" "A" "A" "A"	B. V. Gibson, 680 Polson St., San Francisco Western Elec. Co., San Francisco, Los Angeles, Oakland, Portland, Seattle, Tacoma, Spokane, Denver, and Salt Lake City	Dealers and Central Stations	Distributors	
Westinghouse Elec. & Mfg. Co., San Francisco, Cal.	"Westing- house"	B-3-19 B-2-19 515 Jr. Cab.	O	43 x 25 32 x 24 1/2 24 1/2 x 16 1/2 37 1/2 x 20 1/2	34 34 31 48 1/2	18x13x16 18x13x16 12x16x12 14x14x 17 1/2	8 10 8 8	7 8 7 8	2000 1500 1500 1500	4000 4000 8000 3500	1500 1500 1000 1500	1500 1500 1000 1500	8000 7000 5000 6500	E-L "A" "A" "A"	E-L "A" "A" "A"	Westinghouse Elec. & Mfg. Co., San Francisco, Seattle Los Angeles and Portland Seattle, Spokane Salt Lake, Tacoma, Tucson, Butte, Casper, Wyo., Denver, El Paso, Fresno	Dealers and Central Stations	Distributors	



A Practical System of Accounting for Contractor and Dealer

By F. V. Mitchell

AS stated on page 250 of the Oct. 1 issue of the Journal of Electricity, the net profit to date as shown on the Profit and Loss Statement during the calendar year is added to Capital Account on the Balance Sheet in accordance with Table I:

TABLE I
Balance Sheet, Aug. 31, 1924

ASSETS			
Current			
1 Cash in Bank	\$1,500		
2 Petty Cash Fund	100		
3 Accounts Receivable—			
Finished	\$10,000		
Unfinished	7,500		
	\$17,500		
3a Less Provision for Doubtful			
Accounts	1,000	16,500	
4 Notes Receivable		500	
10 Merchandise Inventory—Book Value—			
Wiring	3,000		
Fixtures	7,000		
Store	5,000	15,000	
15 Work in Process—			
Wiring	4,000		
Fixtures	2,000	6,000	
	\$39,600		
16 Less Unfinished Contracts...	9,500	\$30,100	
Fixed			
20 Automobiles	\$2,500		
20a Less: Provision for Depreci-			
ation	800	\$1,700	
21 Furniture & Fixtures	2,000		
21a Less: Provision for Depreci-			
tion	400	1,600	
22 Tools & Equipment	1,000		
22a Less: Provision for Depreci-			
ation	200	800	4,100
Total Assets,			\$34,200
LIABILITIES			
30 Accounts Payable	8,500		
31 Notes Payable	6,000		
32 Accrued Payroll	500		
Total Liabilities,			\$15,000

Net Worth

40 Capital Account	\$12,000		
41 Personal Account	200	\$12,200	
Add Net Profit,			
1-1-'24 to 8-31-'24	7,000	\$19,200	
Total Liabilities & Net Worth,			\$34,200

All the amounts contained in the statement shown in Table I represent the balances as they appear in the respective ledger accounts, debit balances representing assets and credit balances representing liabilities. The total amount of Unfinished Contracts appearing as a credit balance in Account No. 16 is shown on the Balance Sheet as a deduction from Current Assets. This is done for the reason that the amount uncollected on these unfinished contracts is shown as a current asset under Accounts Receivable, and also because the amount of material, labor and overhead that have been put into these unfinished contracts is included as a Current Asset under Work in Process. The effect is as shown in Table II:

TABLE II	
Accounts Receivable—Unfinished	\$ 7,500
Work in Process	6,000
	\$13,500
Less Unfinished Contracts	9,500
	Balance, \$4,000

As readily can be seen, the amount of \$4,000, shown in Table II, represents the balance uncollected on material, labor and overhead costs (called Work in Process—\$6,000) that have been put into these unfinished contracts up to Aug. 31, 1924. In this way only the actual amount due at cost on unfinished work is included in the Net Current Assets, but the total value of unfinished contracts is also set forth in proper manner, the latter information naturally being a matter of mutual interest when the statement is reviewed for credit purposes. The amount of Accounts Receivable—Unfinished is obtained from the Work in Process Summary, an illustration of which appeared as Fig. 2 on page 136 in the Aug. 15 issue of the Journal of Electricity.

After adding the net profit for the number of months to date in the calendar year to the Capital Account, the present net worth of the business is ascertained, which amount when added to the total liabilities equals the amount of the total assets. This constitutes a final proof that the Profit and Loss Statement and Balance Sheet have been prepared correctly.

The Profit and Loss Statement showed a net profit of \$7,000 and the Balance Sheet shows a corresponding increase in net worth of \$7,000, which proves very conclusively the correctness of this figure. However, a common question asked after noting that there was a net profit made during a period is, "Where did the profits go?" That is, what disposition was made of the profits during that period? There is no clearer explanation of this feature of the business than through the means of what is commonly called a Comparative Balance Sheet. Table III shows the method of preparing one of these forms.

Any profits made during a period must be reflected in the Balance Sheet by net increases in assets and net decreases in liabilities between the beginning and ending of the period under observation, or net increases in assets over net increases in liabilities, unless the proprietor has drawn out more than the salary allowance included as expense of the business. In Table III, such was not the case and the example shows very clearly that there were increases in various assets amounting to \$5,000 and decreases in liabilities amounting to \$2,000, the addition of the two amounts equaling the total net profit of \$7,000 for the period. This is one of the most valuable statements that can be prepared for the management of the business as it enables them to keep their finger right on the pulse of the situation and take up the necessary corrective methods to reduce amounts that may be piling up in the wrong direction. Close attention to and prompt action upon a comparative statement of this nature will help materially to relieve the financial stringency of any business.

TABLE III
COMPARATIVE BALANCE SHEET

Assets	8-31-'24	1-1-'24	Increase	Decrease
Cash in Bank.....	\$ 1,500	\$ 1,250	\$ 250	
Petty Cash Fund.....	100	100		
Accounts Receivable (net) ..	16,500	15,000	1,500	
Notes Receivable	500	250	250	
Merchandise Inventory	15,000	12,500	2,500	
Work in Process.....	6,000	5,500	500	
Automobiles (net)	1,700	1,700		
Furniture & Fixtures.....	1,600	1,600		
Tools & Equipment.....	800	800		
	<u>\$43,700</u>	<u>\$38,700</u>	<u>\$5,000</u>	
Less Unfinished Contracts ..	9,500	9,500		
Total Assets.....	<u>\$34,200</u>	<u>\$29,200</u>	<u>\$5,000</u>	
	\$29,200			
Net Increase in Assets.....	\$ 5,000			
Liabilities				
Accounts Payable	\$ 8,500	9,500		\$1,000
Notes Payable	6,000	7,000		1,000
Accrued Payroll	500	500		
Personal Account	200	200		
	<u>\$15,200</u>	<u>\$17,200</u>		<u>\$2,000</u>
		15,200		
Net Decrease in Liabilities.....		\$2,000		
Net Increase in Assets.....		5,000		
Net Profit 1-1-'24 to 8-1-'24.....		\$ 7,000		

INDUSTRIAL NEWS



Construction on High Head Plant Is Nearly Completed

Construction on the Leevining Creek No. 1 hydroelectric project of the Southern Sierras Power Company has been practically completed and final tests are being made. The plant, located at an elevation of 8,000 ft. in the Sierra Nevada Mountains draws water from reservoirs at elevations above 9,000 ft. The natural reservoir from which the supply is taken directly is Saddlebags Lake. The capacity of this reservoir has been increased to 10,000 acre-ft. by a 30-ft. rock fill dam with timber face.

The static head on the plant is 1,675 ft. which is developed in a single penstock varying from 48 in. in diameter at the upper end to 24 in. at the power house. The plant contains a single 10,000-kva. generating unit mounted on the shaft of a 14,000-hp. single overhung impulse wheel. This wheel is one of the largest units ever equipped with a deflector of the sleeve type for controlling speed.

Current is delivered over a 110,000-volt wood pole transmission line to the company's power line at Rush Creek, 22 miles away. Steel core aluminum conductors are supported on poles 50 to 65 ft. in height.

Green River Site Applied For by Utah Power Company

Further development of the power possibilities of the Green River is planned by the Utah Power & Light Company. An application has been filed by that company with the state engineer of Utah for permission to use 5,500 sec.-ft. of water from the river for generating electric energy.

The company proposes to utilize the Split Mountain district, fifteen miles east of Vernal, in Uintah County. Construction of a dam 225 ft. high which will back the water up for miles and form a reservoir with an estimated capacity of 200,000 acre-ft. will be undertaken. The water will be stored from Feb. 1 to July 1. Through a diversion tunnel 24 ft. in diameter and 4,000 ft. long, water will be conveyed to the proposed power site, several miles downstream, where power will be generated under a 270-ft. head. At a point about seven miles upstream from the town of Jensen the water will be returned to the stream.

Irrigationists Lose in Fight for Third of River Flow

A decision stating that the Mt. Shasta Power Corporation, a subsidiary of the Pacific Gas and Electric Company, has the right to the full flow of Fall River, in northern California,

has been handed down by Judge Charles J. Luttrell of the Shasta County superior court. The power company is being fought by the Fall River Irrigation District which claims the right to one-third of the flow of Fall River for irrigation purposes.

The power company claims the right to the entire flow of the river, at its tunnel diverting Fall River to Pit No. 1 plant, inasmuch as it has acquired all the riparian rights along Fall River from its confluence with Pit River upstream to the tunnel intake. If the district were given the right to divert one-third of the flow of the river, the potential capacity of Pit No. 1 plant would be reduced accordingly.

The issue at stake is purely a legal one and it is understood that the irrigation district will appeal the case to get a decision from the supreme court.

Roosevelt Dam Plant Capacity Increased.—Installation of a 10,000-hp. addition to the Roosevelt Dam plant on the Salt River, Ariz., of the Salt River Valley Water Users' Association, has been completed. The capacity of the plant is now 23,000 hp. In addition to the Roosevelt plant the association has four hydro plants with a combined capacity of 10,500 hp. and has under construction on the Salt River, 27 miles below Roosevelt, the Mormon Flat Dam, which is 80 per cent complete. This dam will rise to a height of 221 ft. and will impound 98,000 acre-ft. of water. The association has also started construction on the Horse Mesa Dam 17 miles below the Roosevelt Dam. This dam when completed will be 307 ft. high and 40,000-hp. in generating capacity is contemplated. The Inspiration Consolidated Copper Company has recently signed a twenty-five-year contract with the association by which the company becomes the largest single user of electrical energy in Arizona.

Site for Step-Up Station Purchased.

—The Pacific Gas and Electric Company has purchased 80 acres of land at Panorama Point, in the vicinity of Redding, Calif., to be used as a site for a substation. The transformers in the station will be designed to step-up voltage from 110,000 to 220,000 volts. The substation will receive energy from the Copco No. 2 plant of The California Oregon Power Company at the lower voltage and will raise it for transmission via the 220,000-volt line leading from Pit No. 1 plant to Vaca-Dixon substation. The new substation will be 35 miles from the terminus of the line being built by The California Oregon Power Company and this distance will be bridged by a 110,000-volt line to be built by the Pacific Gas and Electric Company.

Insulator Tests Are Carried On by Oregon College

Cooperating with the overhead systems committee of the Northwest Electric Light and Power Association, the Oregon Agricultural College, Corvallis, Ore., is making tests on 11,000 to 66,000-volt insulators of different manufacture. The tests, which are to be carried on under the direction of F. O. McMillan, associate professor of electrical engineering, embrace those of the A.I.E.E., and consist of tests for dry flashover, wet flashover, corona formation voltage, puncture, and a strain test combined with a voltage equal to 85 per cent of the dry flashover voltage.

Such tests were recommended by last year's committee on overhead systems with a view to giving "the engineer some data on which to base studies in dealing with the ratings shown by the manufacturers in their catalogs," and this year's committee is carrying out this recommendation. The manufacturers have willingly cooperated and have supplied a number of each size of insulator within the range specified sufficient to provide several for each test.

Electric Transportation Society Elects New Officers

The Electric Transportation Association, of San Francisco, Calif., at the monthly meeting held in the Fairmont Hotel, Oct. 9, elected officers for the ensuing fiscal year. The meeting was attended by all but two members, who were absent from the city. Eugene Kower, of the Electric Storage Battery Company, was elected president and Arthur Walthew, of the Autocor Sales & Service Company of California, vice-president. C. D. Monteith, of the Pacific Gas and Electric Company was made secretary-treasurer while W. J. Walsh, of the Great Western Power Company, was named assistant secretary-treasurer. The auditing committee named by the new president is composed of H. C. Cleveland, C. G. Scott and R. C. Griffin.

Line Extended to Mine.—The Eastern Oregon Light & Power Company, Baker, Ore., is extending a 22,000-volt line from Hanover, an old mining camp five miles north of Sumpter, to the Ibex mine, a distance of about four miles. The line, which traverses the rugged Blue Mountain country, has an average span of 300 ft., and the conductors are ¾-in., double-galvanized, Siemens-Martin, steel-strand cables. The present load of 125 hp. will be served through two 75-kva., 22,000-2,300-volt transformers, but space is provided for a third transformer to be installed when an increase in load warrants it.

Temporary Rate Increase Denied Edison Company

California Commission Reverses Original Decision Granting
10 Per Cent Increase for Period of Eight Months

The application of the Southern California Edison Company for a temporary rate increase, to cover extraordinary operating expense due to abnormal drouth conditions, has been denied by a decision of the California Railroad Commission issued Oct. 11. The decision was on a rehearing of the application of the Edison company and reverses the original decision, made Aug. 1 (Journal of Electricity, page 142, Aug. 15, 1924), which granted to the company an increase of 10 per cent for a period of ten months from Sept. 1, 1924. A rehearing of the original case was demanded by the minority commissioners, Clyde L. Seavey and Egerton Shore, and by J. T. Whittlesey, one of the majority. In the present case the original minority has become the majority through the addition of the vote of Commissioner Whittlesey. A minority dissenting report has been made on the present decision by Commissioners Brundige and Martin who hold that the company is entitled to an increase in rates.

There is no controversy in the two opinions as to the major facts of the proceeding. All members of the commission are agreed that the Edison company will collect approximately \$5,000,000 less under the existing rates than it would have collected under normal conditions. The division is solely on the question as to whether the company should be allowed an increase of rates, to meet in part the deficiency in its earnings below normal year earnings, or whether the company should absorb all the deficiency itself.

In denying the increase of rates to make up this deficiency in earnings, the majority decision states that additional evidence was brought out at the re-hearing indicating that there will be more power available for distribution by the company than was expected at the time of the original hearing, and that this will increase the company's revenue to a corresponding extent. Much of this energy, however, will come from expensive sources, resulting in an increase of operating expenses. It is stated that the estimated result is not changed substantially from that shown in the original presentation.

The majority decision points out that as the result of a rate proceeding for this company in 1920 a contingency reserve was established to absorb fluctuations in operating expenses occasioned by variations in the supply of hydroelectric power, and changes in the price of fuel oil. The decision states that for several years the company, the Railroad Commission, and the public have accepted the principle that rates should be fixed upon the basis of average water power conditions. Variations in operating expense during the last few years have been absorbed by the company through the medium of this contingency reserve. Had 1924 conditions not been so extreme, it is asserted, there is no doubt that the resulting expense would also have been absorbed by the company without asking relief, even though in so doing the company somewhat more than exhausted the contingency reserve.

In denying the request for special consideration the majority decision observes that no claim has been made that these large and unusual expenses are not being made in the public interest, or that the company is seeking a selfish advantage in making them, but:

"* * * The policy of considering wet and dry years upon an average basis having been adopted and having given satisfactory results for a number of years, it is apparent that the present year should be taken into the average rather than given special treatment if, by so doing, no detriment to the public interest results."

The decision further states that it is realized that without an increase of rates the company will be unable to sell any bonds for approximately one year, but this is the result of mortgage provisions rather than market conditions. It is contended that the denial of the application will not seriously affect the company's ability to proceed with necessary construction work, or materially increase the average cost of money to the company. The financial position of the company is unusually strong, it is pointed out; the money it has borrowed is protected by a substantial stock equity and its floating debt is not excessive.

It is asserted that even though the company will earn much less than the normal net revenue, the present year should be treated as but one of many years going to make up the average conditions upon which rates are based, and that the requested increase should be denied.

Commissioners Brundige and Martin in the dissenting opinion pointed out that actual operating figures for May, June and July were used in the rehearing, instead of the estimated figures for those months used in the original hearing, and showed a slightly lower percentage of return to the company than had been estimated in the original decision, granting the increase in rates.

The dissenting members emphasize that there is no dispute as to the fact that it will cost the Southern California Edison Company approximately \$5,000,000 more to serve its consumers in 1924 than it would have cost during average water conditions. The disagreement is over the question of what shall be done about it.

The lack of rainfall is pointed out as the most serious in 40 years. Despite the drouth, and that all industries were forced to reduce their demands, it is estimated that the company's sales will exceed those of 1923 by approximately 17 per cent, and those of 1922 by 53 per cent, due to rapid development of the territory served. However, the shortage of hydroelectric power was 820,000,000 kw-hr., or 53½ per cent below the amount that should have been produced under normal conditions.

To make up this shortage the company ran all its steam plants to capacity, and reopened its Santa Barbara and Visalia steam plants, which had been thrown out of the rate base by the Railroad Commission in establishing the

present rates. It also leased and rehabilitated every private steam plant available, including the Pacific Electric plant that had not been used for several years. So great was the necessity and so imperative the demand, that much of the purchased power cost the company more than it received for it.

Although the Railroad Commission estimated in fixing present rates that the company would earn 7½ per cent on the rate base allowed by the commission, the minority members state, the effect of the dry year will be to reduce the earnings \$4,053,000 below the estimated 7½ per cent return. After using all of the contingency reserve, amounting to \$1,581,000, the company is still \$2,472,000 short of the 7½ per cent return, out of which the company must pay all interest on funded and floating debt, interest upon re-invested depreciation reserve, amortize its debt discount, and expense, and pay dividends on its stock.

The original decision in the proceeding would have granted the company a 10 per cent increase in rates for a period of eight months, or \$1,100,000. This amount added to the \$1,581,000 in the contingency reserve would have permitted the company to earn 6¼ per cent on the investment in the property devoted to the public service. The original decision would have divided between the company and the rate-payers on a 50-50 basis the extraordinary expense of the company in serving the public. The minority ruling on the original hearing proposed to throw all of that burden on the company. The minority having become the majority in the re-hearing decision now propose to spread this deficiency over a long period of years, the dissenting opinion states.

The dissenting members object to doing this, stating that it would result in consumers, who will receive little if any benefit at all from the increased expenditures, being required to pay over a long period of years for the company's 1924 deficiency in revenue. This would, in effect, they say, leave in the hands of future commissions the duty of reimbursing the company for necessary and admitted expenditures, which in equity, the company is entitled to be reimbursed for now. They point out that the present commission will have no power to bind its successors to such a course. In concluding they say:

"Economic conditions and price levels change from time to time. Utility rates, to be fair alike to consumers and the company, must change also. It is not possible that any commission can fix rates so as to spread the losses of 1924 over a period of forty or even of twenty years. If this were possible, in our opinion, it would be undesirable. In effect, the result can only be to deny the company any reimbursement for its extraordinary expenditures.

"We feel that if some consideration is not to be given to the extraordinary cost incurred in purchasing and in producing power to keep the wheels of industry moving as rapidly as possible this year, and if all these extraordinary expenditures must be borne in their entirety by the company, there will be little, if any, incentive, under similar conditions in the future, for any utility to go to such lengths and incur such costs as did the Southern California Edison Company this year in its endeavor to serve its consumers."

First Unit of Skagit Project Formally Started

Gorge Plant of City of Seattle Is Officially Put in Service
and Dedicated with Ceremonies on Sept. 27

With the pressing of a button in Washington, D. C., by President Coolidge, the first unit of the Skagit development of the City of Seattle, Wash., was formally put in service on Sept. 27. The ceremonies were held after several weeks of testing during which period each phase of the plant's operation was tried out and pronounced in first-class condition.

The Gorge plant, comprising the first unit of this development, is located on the Skagit River about 100 miles north-east of Seattle. A timber-crib dam,



Interior view of Gorge plant showing two 30,000-kva. generators.

263 ft. long at the top, with a maximum height of 30 ft., raises the low water level of the river 25 ft. This is a temporary dam, since the completed project contemplates a permanent masonry dam at this point, 130 ft. above the river bed, which would add approximately 100 ft. to the present head of 285 ft. The permanent dam is to be located a few hundred feet downstream from the present dam.

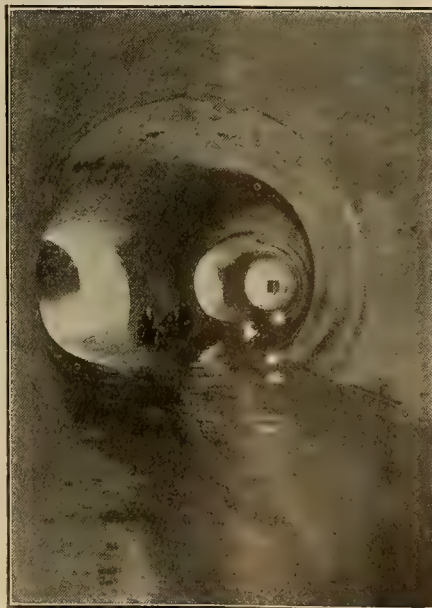
A temporary intake tunnel, 17 ft. in diameter, protected by steel trash racks, diverts the water into a concrete lined pressure tunnel through the solid granite of the adjacent canyon wall. The tunnel is 11,000 ft. long and has an inside diameter of 20 ft. 6 in. Within 300 ft. of the power house the tunnel connects with three 10-ft. steel penstocks, encased in concrete. In the tunnel line, 1,000 ft. from the power house, is located the surge tank, which extends vertically above the tunnel to a height of 330 ft., bringing it to the approximate elevation of the proposed masonry dam. Each unit of the present plant will take 900 sec.-ft. of water at the higher head to develop its full capacity of 30,000 kva. At the present head, each unit will develop 16,000 to 20,000 kva. The tunnel is designed to carry 3,000 sec.-ft. of water.

In each penstock at its entrance to the turbine is installed a 10-ft. Johnson valve, remote-controlled from the switchboard room. The units installed

are two 37,500-hp., S. Morgan Smith, vertical reaction turbines which are connected to two Westinghouse 11,000-volt, 257-r.p.m., vertical generators, rated at 30,000 kva. Each unit is equipped with an S. Morgan Smith governor, controlling the wheel gates and automatically opening a pressure relief valve in case of excessive hydraulic pressure. The relief valves, which will carry 85 per cent of the flow of water, are likewise of S. Morgan Smith manufacture and design. Space in the present building is provided for a third water wheel and generating unit identical with the two now in service.

The switchboard is a Westinghouse, bench-type board, having a panel for each machine, one for the third unit, and one for the tie line when a second transmission line is built. For each machine there is provided a transformer bank consisting of three 10,000-kva., 11,000-165,000-volt, oil and water cooled, single bushing type, Westinghouse transformers. Eleven thousand-volt oil switches are cut in between the generators and the transformers, and 165,000-volt oil switches, between the transformers and the line. These are remote-controlled from the switchboard. Air gap disconnects complete the switching equipment. The 11,000-volt bus is of stranded copper cable with varnished cambric insulation. The 165,000-volt bus is of galvanized iron pipe. Station service is supplied through a 2,500-kva. bank of 11,000-6,600-volt, Westinghouse transformers, while two smaller banks supply 440-volt, 220-volt and 110-volt service to the various motors and the lights.

Among the auxiliary equipment are a 250-kw. motor-driven exciter, a 150-ton Shaw crane, oil pressure systems for governors and for machine lubrication, suitable current and potential transformers, and three Westinghouse voltage regulators, one being a spare.



Interior view of 20-ft. 6-in. tunnel leading to the first unit of the Skagit development of the City of Seattle. The upper ends of the penstocks are in the background.

Because of the severity of the winter weather, all generating, transforming, switching and auxiliary equipment is housed within the concrete power house building, 130 ft. long, 70 ft. wide and 90 ft. high.

The 165,000-volt, single-circuit, 100-mile transmission line connecting the Gorge plant with North substation in Seattle, is strung on two-pole wooden towers, of H-type construction. Within the city limits the conductors are suspended on cables swung between poles located on either side of the street. The conductors are 477,000 circ. mil. stranded aluminum cable with steel core. North substation, which was constructed as part of the Skagit development, contains three 10,000-kva. transformers to handle the present Skagit output.

The Skagit development, as it stands today, including construction railroad, Newhalem plant, North substation, Gorge plant and transmission line, has cost \$12,680,000, including interest during construction.

Rocky Mountain Men Active in Home Lighting Campaign

According to a recent report of Clare N. Stannard, Rocky Mountain regional director for the Better Home Lighting Campaign, 110 communities in that territory have agreed to participate and of that number 22 started their local contests Oct. 1. The Public Service Company of Colorado, the largest central station in the region, has arranged the contest in each of the 52 towns it serves and the Southern Colorado Power Company is second in standing. The only large city in the state from which reports have not been received as yet is Trinidad, Colo.

In Denver, the Electrical Cooperative League of that city is supervising the campaign and is also aiding the suburban central stations operating independent contests. The Denver activity will start Oct. 20 and continue for 30 days. Distribution of literature will be made through electrical stores and others instead of through the schools, according to S. W. Bishop, manager of the league. Charles A. Semrad, commercial manager of the Public Service Company of Colorado, is serving as Colorado state director of the campaign with E. H. Coe of the same company as his assistant with the latter in general charge of the activity in the various districts of the company.

A meeting of the leading utility operators in New Mexico was held in Albuquerque, Oct. 10, under the guidance of Arthur H. Prager, director in that state, to consider means of expediting the contest and securing the cooperation of additional companies.

Rain Falls in California.—Approximately half an inch of rain fell in California during the storm which visited that state Oct. 5 and 6. Snow also fell in the Sierra and there is approximately 6 in. at Summit at the present time. At Huntington Lake, the Southern California Edison Company reported that there had been a precipitation of 0.8 in. and that there was about 6 in. of snow on the ground. The rain also helped in the agricultural districts of the state. Where rain fell in the mountains there was little run-off due to the dryness of the ground.

Northwest Ties in with Home Lighting Movement

A. C. McMicken, Regional Director, Has Districts Organized and Committees Functioning Throughout Five States

Under the direction of A. C. McMicken, sales manager of the Portland Electric Power Company, Portland, Ore., the Better Home Lighting Campaign is getting under way and will be put on in virtually all the districts of the Northwest. Owing to the scattered nature of the territory included and the distances from headquarters of some of the larger centers, it was found advisable to subdivide the regional director's work, and P. M. Parry, commercial manager of the Utah Power & Light Company, Salt Lake City, has been made state director for Utah, and J. F. Orr, sales manager of the Idaho Power Company, Boise, Idaho, state director for Idaho.

Due to the absence of electric clubs and leagues generally over the Northwest, it was found necessary to press into service the power companies as the best fitted organizations to carry on the campaign. As a result each power company has taken charge of the campaign in its particular territory. In several districts the local contractors and dealers have joined whole-heartedly in the movement with the appointed chairmen and have assessed themselves for a contribution toward the local expenses.

In Portland, Ore., the campaign is in the hands of a special committee composed of representatives of the two power companies, the jobbers, the dealers and the manufacturers. The progress of the Portland campaign appears on another page of this issue. There probably will not be any campaign in Seattle and Tacoma, Wash., but the Puget Sound Power & Light Company is planning to devote attention to the work in other Puget Sound cities. In Spokane, the chairman has not yet been definitely appointed but it seems likely that the campaign will be conducted there by the Electrical Service League of that city, of which Lewis A. Lewis, sales manager of The Washington Water Power Company, is president.

Herewith are listed the different districts of the territory in which organization has been effected and work started. Other districts may be added to this list as the movement gains momentum.

Denver League Moves Offices.—The Electrical Cooperative League of Denver, Colo., has moved its offices to rooms 404-5 in the Gas & Electric Building in that city.

BETTER HOME LIGHTING CAMPAIGN ORGANIZATION

District	Extent	Chairman	Address
Utah, northern	101 communities in the vicinity of Salt Lake City.	C. Louis Collins,	Rocky Mt. Elec. Develop. League, Salt Lake City.
Colorado, southern Idaho.			
Southwestern Idaho, northeastern Oregon.	26 communities in vicinity of Boise, Idaho, and Ontario, Ore.	J. F. Orr,	Idaho Pr. Co., Boise.
Northern Idaho.	Sand Point and vicinity.	Lee Bennett,	Mt. States Pr. Co., Sand Point.
Northwestern Montana.	Kalispell and vicinity.	W. B. McDonald,	Mt. States Pr. Co., Kalispell.
Eastern Oregon.	Baker, LaGrand, etc.	E. L. Crockatt,	East. Ore. Lt. & Pr. Co., Baker.
Northern Oregon.	Portland & suburbs and Vancouver, Wash.	Francis H. Murphy,	P.E.P. Co., Portland.
Northern Oregon.	Astoria, Hood River, The Dalles, and Pendleton.	Verne H. Moon, assisted by George T. Bragg,	P. P. & L. Co., Portland.
Willamette Valley, Oregon.	Oregon City and vicinity.	George E. Sullivan,	P.E.P. Co., Oregon City.
Willamette Valley, Oregon.	Salem and vicinity.	W. M. Hamilton,	P.E.P. Co., Salem
Willamette Valley, Oregon.	Albany, Corvallis, etc.	F. D. McKenna,	Mt. States Pr. Co., Corvallis
Tualatin Valley, Oregon.	Hillsboro and vicinity.	J. H. Murton,	Puget Sd. Pr. & Lt. Co., Hillsboro.
Southern Oregon, northern California	43 communities in vicinity of Medford, Grants Pass, Klamath Falls, etc.	W. M. Sheppard, assisted by J. J. Buchter,	The Cal. Ore. Pr. Co., Medford
Southwestern Washington	Kalama, Kelso, Chehalis, etc.	C. E. Day,	Puget Sd. Pr. & Lt. Co., Chehalis.
Northwestern Washington.	Everett and vicinity.	A. M. Chittrey,	Puget Sd. Pr. & Lt. Co., Everett.
Northwestern Washington.	Arlington, Port Townsend, and vicinity.	R. U. Muffley,	Wash. Coast Utilities Co., Seattle.
Northwestern Washington.	Bremerton and vicinity.	Not named,	North Pacific Pub. Serv. Co., Bremerton.
Eastern Washington.	18 communities in vicinity of Yakima and Walla Walla.	Verne H. Moon, assisted by George T. Bragg,	P. P. & L. Co., Portland.
Northeastern Washington.	Spokane and vicinity.	Not named,	Elec. Service League, Spokane.
Northeastern Washington.	Cheney and vicinity.	B. R. Lean,	Cheney Lt. & Pr. Co., Cheney.

British Columbia Home Lighting Campaign to Open Nov. 15

The Better Home Lighting Campaign is being taken up actively by the entire electrical industry of British Columbia under the direction of E. E. Walker, sales manager, and J. Lightbody, publicity manager of the British Columbia Electric Railway Company, who are the regional directors. A fund of \$4,200 has been subscribed for conducting the campaign in Vancouver, Victoria and surrounding territory.

In Vancouver the following have been appointed chairmen of the various committees:

Finance, H. Pim, district manager, Canadian General Electric Company; prizes, J. F. Little, district manager, Northern Electric Company; prize awards, J. R. Reed, district manager, Canadian Westinghouse Company; school boards, E. E. Walker, sales manager, British Columbia Electric Railway Company; dealer cooperation, H. Stephenson; distribution of supplies, J. Priestman, assistant sales manager, British Columbia Electric Railway Company; lectures, W. C. Mainwaring, district sales manager, Northern Electric Company; publicity and advertising, J. Lightbody, publicity manager, British Columbia Electric Railway Company.

The approval of the Vancouver school boards and a number of other school boards in the territory has been obtained for the operating of the contest through the schools. In one case the head of a private school was so interested in the national announcement of the contest that he wrote to headquarters in New York before he heard of the local activity.

The judges of the Vancouver contest will be J. K. MacRae, president, Vancouver Board of Trade; E. S. Robinson, city librarian; and Prof. W. A. Smelzer, University of British Columbia, and a judge of the supreme court.

The Victoria judges will be George Deane, municipal inspector of schools; F. Giolma, journalist, executive, Victoria Publicity Bureau; E. C. Hayward, electrical engineer; and Mrs. H. Hodges, Victoria Daily Times, president, Victoria Woman's Canadian Club.

The British Columbia contest is expected to open on Nov. 15, delay having been occasioned by printing of primers and folders in Canada to avoid United States imprint which might have affected the campaign. All the branches of the electrical industry have been organized and are working hard to make it a success.

Correction Made.—The Economy Fuse & Manufacturing Company has not moved its district offices from Seattle, Wash., to Denver, Colo., as was announced on page 225 of the Sept. 15, 1924, issue of the Journal of Electricity. W. E. Jones continues to be in charge of the Seattle office, which remains the district headquarters. F. L. Easton is in charge of the Denver sales office.

Public Speaking Class Starts Term in Colorado.—The public speaking class for qualified utility employees, sponsored by the Rocky Mountain Committee on Public Utility Information, was opened for its second term in Denver, Colo., Oct. 9. H. H. Argabrite of the Western Electric Company in that city supervises the class.

Home Lighting Campaign Gains Headway in Portland

In the hands of a local committee representing all branches of the electrical industry, the Better Home Lighting Campaign is financed and well under way in the Portland, Ore., district, including the suburbs of the city, Oregon City, and Vancouver, Wash. The sanction of the school board has been obtained, and, through the national advertising, supplemented by advertisements in the local newspapers and broadcasting from the Oregonian radio station, a high degree of interest has been aroused. It is believed that there will be more than 15,000 entries in the essay contest.

In arranging the prizes, the committee accepted the theory that it was fair for boys and girls to compete equally, but that grade school students should not have to compete against high school students. Thus two equal sets of prizes are offered, one set for the entrants from each class of schools. The prizes aggregate \$1,710, including one grand prize of \$200 to be competed for by all three cities. Besides the grand prize there are in Portland ninety-two other prizes ranging from \$150 to \$5; in Vancouver, twenty-eight from \$50 to \$5; and in Oregon City, eighteen from \$25 to \$5.

The judges selected to choose the winners in the essay contest are: Marshal Dana, associate editor of the Oregon Daily Journal, chairman; J. C. English, lighting expert of the English Company, electrical contractors and dealers; Dr. Horace B. Fenton, eye, ear, nose and throat specialist; E. H. Whitney, assistant superintendent of schools; Judge W. N. Gatens, formerly judge of the circuit court; and Mrs. C. B. Simmons, educator and clubwoman.

The executive council of the Lighting Educational Committee, Portland district, is headed by Francis H. Murphy, illuminating engineer with the Portland Electric Power Company, and is composed of: F. N. Averill, Fobes Supply Company; George Boring, Pacific States Electric Company; J. C. English, English Company; C. M. Higbee, electrical contractor, A. S. Moody, General Electric Company; J. C. Plankinton, Northwestern Electric Company; J. H. Sroufe, Jaggar-Sroufe Company; W. P. Strandborg, Portland Electric Power Company; and Carl L. Wernicke, Westinghouse Electric & Manufacturing Company.

Sub-committees, handling details of the campaign, consist of: school co-operation, J. C. English, chairman, Dr. A. K. Higgs, oculist, and F. H. Murphy; prize awards, J. C. Plankinton, chairman, E. L. Knight, of E. L. Knight & Company, electrical contractors and dealers, E. F. Whitney, General Electric Company, R. W. Turnbull, Edison Electric Appliance Company, L. G. Fear, Westinghouse Electric & Manufacturing Company, and W. R. Bowles, Morrison Electric Company, electrical contractors and dealers; finance, A. S. Moody, chairman, F. N. Averill, George Boring, C. M. Higbee, and R. M. Boykin, Puget Sound Power & Light Company; judges, George Boring, chairman, Sidney Ward, Western Electric Company, and W. W. Wheat, North Coast Electric Company; speakers and distribution of material, Carl L. Wernicke, chairman, assistants not yet appointed.

The organization has procured the

services of a secretary in the person of Jay S. Groo, formerly with the Northwestern Electric Company, and has established headquarters in the office of the Journal of Electricity, 1206 Spalding Building, this space having been loaned for the purpose.

British Columbia Company Applies for Water.—The East Kootenay Power Company, Fernie, B. C., which supplies the towns of Fernie and Cranbrook and the Crows Nest Coal Company and the Sullivan mine, besides a number of lumber mills and smaller concerns, is applying to the British Columbia government for a license to take 100 sec.-ft. of water from Line Creek and store it in a reservoir to be constructed by damming the outlet of Grave Lake. This will flood about 100 acres of land and give the reservoir a capacity of 15,000 acre-ft.

Points of Interest Visited by Convention Delegates

As guests of the San Francisco section of the A.I.E.E., members of the party who made the trip to the West to attend the annual Pacific Coast convention of the society were taken to many points of interest in the vicinity of San Francisco. Vaca-Dixon substation of the Pacific Gas and Electric Company, Stanford University and the Hetch Hetchy water project of the City of San Francisco were visited during the time that the party stayed in the city.

The members of the Eastern party who made the trip to the Pasadena convention were:

Mr. and Mrs. J. C. Damon (American Brass Company), Miss Alice Basset, Waterbury, Conn.; Mr. and Mrs. Edgar Kobak (McGraw-Hill Company), James H. McGraw, Jr. (McGraw-Hill Company), L. W. W. Morrow (Electrical World), E. H. Hubert (A.I.E.E.), New York, N. Y.; Dr. and Mrs. J. H. Whitehead (Johns Hopkins University), Baltimore, Md.; Mr. and Mrs. N. S. Amstutz (research engineer and patent attorney), Valparaiso, Ind.; Mr. and Mrs. H. C. Sutton (The United Gas Improvement Company), Mr. and Mrs. C. J. Russell and Miss Dorothy Russell (Philadelphia Electric Company), Philadelphia, Pa.; Mr. and Mrs. J. L. Yardley, K. Yardley and Master Ralph Yardley (Westinghouse Electric & Manufacturing Company), Pittsburgh, Pa.; J. L. Burnham (General Electric Company), Mr. and Mrs. W. J. Foster (General Electric Company), Schenectady, N. Y.; H. E. Bussey (General Electric Company), Atlanta, Ga.; and Mr. and Mrs. J. T. Lawson (Public Service Electric Company), East Orange, N. J.

Edison Company Measures Surges on Transmission Lines

Fifteen Klydonographs have been installed at Laguna Bell, Vestal, Magunden and Big Creek No. 1 stations on the 320-kv. lines of the Southern California Edison Company, for the investigation and measuring of surges.

These instruments are wave meters manufactured by the Westinghouse Electric & Manufacturing Company and make use of the photographic plate for obtaining a picture of the effect of surges or other electrical disturbances taking place on the line. Three instruments at each station are electrostatically coupled to the lines, and measure the magnitude and polarity of a surge, the resultant picture being compared to the calibrated photograph made at the laboratory. One instrument, installed at each station except Big Creek No. 1, is magnetically coupled to the lines by means of the use of a ground wire between towers, as an antenna. This antenna instrument photographs a current which is proportional to the rate of change of current in the transmission line, and indicates the steepness of the wave front and the direction of travel.

Preliminary investigation of the results obtained indicate that the disturbances at each station are proportional in magnitude to the distance away from the source, and that surges indicated at any one station are usually caused by switching at or near that station.

Personnel Committee Meeting Held in San Francisco.

Organization of the personnel committee of the P.C.E.A. was completed at the meeting held in San Francisco, Sept. 19. Discussion of the various phases of personnel and employee welfare work preceded the assignment of responsibility for the studies and papers of the ensuing year. These papers will be presented as finished at future committee meetings. Publication of papers, however, will follow the usual practice of the association. Among the subjects assigned are the following: "Advantages of Employment Department"; "Interviewers' Rating and Tests"; "Employees' Educational Activities"; "Employees' Training"; "Accident Prevention"; "Job Analysis, Comparison and Rating." The next meeting of the committee will be held in Los Angeles, in November.



Members of party making trip to A.I.E.E. Pacific Coast convention assembled at Stanford University where they were entertained by Prof. and Mrs. Harris J. Ryan and Prof. H. H. Henline.

Interest in Electric Ranges Is Stimulated in Northwest

In a recent 45-day campaign conducted over the major portion of the territory served by the Puget Sound Power & Light Company, Seattle, Wash., 803 electric ranges were sold and installed. This campaign, which was carried on in all the towns served by that company west of the Cascade Mountains and north of Olympia, under the direction of H. J. Gille, general sales manager, was the first of its kind undertaken by the company, and was successful beyond expectations.

R. W. Clark, sales manager of the Seattle division, who, with L. R. Grant, assistant sales manager, organized the working details, attributed the success attained to the cooperation received from the employees in all departments of the business. Before the campaign commenced a letter was directed to the employees in Seattle and the other cities and towns in which sales effort was to be applied, seeking their aid in furnishing prospects and making sales, and outlining the basis of extra compensation to be received for such effort, which was five per cent for every range sold and three per cent for every prospect turned in that was sold by a regular salesman. This letter was followed by educational meetings in each division, the one in Seattle being attended by more than 200 employees. During the campaign other employee meetings were held and other communications were sent out, so that interest was sustained to the end, and the net result was that many of the sales were made by employees not in the sales department and to prospects turned in by such employees.

In all divisions quotas were established so that the spirit of competition might be injected into the campaign. Prizes were offered for all divisions reaching quota, and for the divisions making the highest percentage of quota. Individual salesmen also were given quotas based on the territory

allotted to them, and prizes were offered in this department so that each could contest against the others on an equitable basis.

Individual sales effort was supplemented by newspaper advertising and by banners on the company automobiles proclaiming the feature of the campaign, which was the moderate down payment of \$10 with the balance on easy terms. Cooking schools and demonstrations, conducted by experts from the Edison Electric Appliance Company in the main cities of all divisions, proved to be popular with the public, and many sales were traced to this activity.

H. J. Gille, in commenting on the results obtained, stated that apparently there is a strong desire among a great many women to cook electrically, and that the principal point to be stressed is that the operating cost is not excessive.

Interest in electrical cooking has also been fostered recently by the Edison Electric Appliance Company working in conjunction with the Anaconda Standard, one of the leading newspapers of Butte, Mont. Under the auspices of the newspaper a three-day cooking school was held in Butte and during this time Mrs. Alan E. Hunt, home economist of the Edison company, demonstrated the value of the electric range. The average attendance during the period of the school was 300 and on the last day, when the baking contest entries were accepted, 400 women were in attendance.

New Type of Automatic Control for Electric Ranges

A new type of time and temperature control has been produced by A. J. Lindemann & Hoverson Company, Milwaukee, Wis., manufacturers of the L. & H. Electric line of electric ranges and appliances. The device will be built into future automatic models of the company and ranges not originally equipped with the automatic control may be so equipped at a later date if it is desired.

The control is composed of a clock device and a mercury column. By means of a clock dial the apparatus may be set for turning on the current in the oven at any predetermined time and for maintaining any desired temperature for any period up to twelve hours. It is not necessary to wind the clock as the setting operation performs this duty. A small red signal lamp with jewel lens in the switch panel indicates when the current is turned on in the oven.

Books and Bulletins

PRINCIPLES OF BUSINESS WRITING

By T. H. BAILEY WHIPPLE. \$2. Published by Westinghouse Technical Night School Press, East Pittsburgh, Pa.

The author of this useful book is "literary critic" for the Westinghouse Electric & Manufacturing Company, that is to say, he edits and revises the writings of the gentlemen on the staff

of that important industrial corporation. In a circular, quoted in the preface, he asserts: "It is no exaggeration to say that the most universal deficiency in our organization is flabby and incorrect expression. This fault is individual, but the organization suffers. The cost is paid in dollars, the total of which is impossible of accurate estimate, because the loss is both tangible and intangible." He proceeds to show how this unfortunate result is produced. He has set himself to correct it by writing on the subject and giving advice the sincerity of which is manifest.

With his work I feel in keen sympathy, of course; because I realize, as he does, the waste of time, money, and patience that follows from sloppy writing whether in business or philosophy. For example, that excellent book "The Mind in the Making" could be improved 25 per cent if the author of it had taken pains to study the technique of writing before he undertook to expound a difficult subject. Let me quote Mr. Whipple again: "Why do shrewd, conservative, sagacious, calculating, dollar-loving business men—the level-headed element of any community—commit their message of trade-building to correspondents whom they know to be too inferior in education and native ability to be entrusted to perform many other business functions?" We may question whether the business man is the obvious type of level-headedness on matters outside his immediate cognizance, but Mr. Whipple's point nevertheless is well taken. It is fair to ask why do newspapers and magazines accept as journalists men without literary qualifications. The answer to these questions is that most people, especially the half-educated business man, has no idea of the value of correct expression, and therefore remains largely inarticulate. As the first sentence in the preface of Mr. Whipple's book says, "the writer of a business letter has in view the favorable effect of the letter upon his correspondent"; in my own little book on the subject I repeat several times the injunction "Remember the reader." Writing is a two-sided, not a one-sided, affair; its purpose is to transfer ideas from one man to another; and the success of the effort depends largely upon the medium of expression; upon bringing two minds into effective contact.

The scope of Mr. Whipple's book is indicated by the headings of some of his chapters, such as "Technique and Methods," "Words and Phrases Often Misused," "Typical Reports," "Typical Letter-writing Problems," "Questions and Answers on Business Writing." The book includes the admirable brochure on "Suggestions to Authors of Technical Papers" by George McLane Wood, editor to the U. S. Geological Survey; of the three other articles quoted by the author, only one, that by F. H. Norton, is worthy of note.

The book is published by the Westinghouse Technical Night School Press, at East Pittsburgh, Pa. It is not surprising that an organization so successful as that of the Westinghouse corporation should exhibit the good sense to maintain a night school and the sagacity to retain on its staff an editor competent to revise its publications, assist its managers, and instruct its stenographers. May the good work continue!

T. A. RICKARD.

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HOTPOINT
ELECTRIC
RANGE!

Balance on Very Easy Terms

This great range sale is on for a limited time only—**NOW** is the time to select ANY MODEL or SIZE of HOTPOINT to suit your requirements.

The HOTPOINT SuperAutomatic embodies every improvement in the range-builder's art. Its oven-heat control is found in no other range.

See the HOTPOINT Models at our Display Rooms in the Electric Building.

We conduct an Electric Cooking School 7:30 and 9:00 every Wednesday afternoon at 12 o'clock—FREE to all.

PUGET SOUND POWER AND LIGHT COMPANY

One of the advertisements used by the Puget Sound Power & Light Company in its range campaign.

Meetings

Technical Section Bureaus Hold First Conclave Meeting

All bureaus of the Technical Section of the P.C.E.A. held meetings in Los Angeles, Calif., Sept. 17-19, and at that time organization of the work of the bureaus was completed. Topics for the year's study were discussed by each bureau and a general outline of the procedure to be followed was adopted.

At the meeting of the Technical Executive Committee, held in the Byrne Building, P. O. Crawford, chairman of the section and the chairmen of the nine bureaus outlined the year's programs for their own committees. The programs met with the approval of the executive committee and it was suggested that they could be co-ordinated with the program of the Technical National Section at the first group meeting to be held in St. Louis, Mo., Oct. 20-23. The committee decided that the bureau chairmen, section chairman and vice-chairman should attend the national group meetings. R. M. Peabody, W. H. Talbott, C. E. Steinbeck and J. C. Gaylord will represent the Technical Section at the St. Louis meeting.

The accident prevention bureau, J. M. Buswell, chairman, at its meeting, prepared a recommendation to the executive committee to the effect that the bureau be given the problems cov-

announced that since the bureau had chosen the subject "Hydroelectric Plant Layout" and personnel had been selected with that subject in view, it was preferable to postpone the proposal and ask that the national committee handle the subject. Members of the committee suggested that the work on "Dams" could be undertaken by a separate sub-committee, arrangements being made that there should be no duplication of the work proposed by the arch dam committee of the Engineering Foundation. The two subjects carried over from last year's work—"Discharge Coefficients Through Large Rectangular Openings" and "Investigation of Silt Deposits in Canals, Flumes and Settling Basins"—will be placed in the hands of a separate committee for continuation. The bureau decided to limit the work on the year's report to the subject of plant layout, including only such details of apparatus as have direct effect on the arrangement of the plant. Details of turbines and impulse wheels will not be considered. The method of dividing the work between the apparatus bureau and the hydraulic power bureau will be left to each sub-committee. An outline of the work of the bureau will be sent to the members in the near future.

C. E. Steinbeck, chairman of the prime movers bureau, presented to the members of that bureau suggestions to the effect that the bureau should spend considerable time in obtaining data relative to the operating experience of steam plants in the district covered by the P.C.E.A. A list covering data to be secured from the various plants was presented and revised and will be followed by the bureau in making its report. The data will be requested on only relatively modern equipment. Various discussions concerning operating conditions occupied the remainder of the meeting.

Six subjects were discussed by the underground systems bureau, C. H. Jenkins, chairman. The subjects were as follows: "Duct Line Temperature Data"; "Conductors: Sizes and Thickness of Insulation"; "Recent Practice in Manhole and Conduit Construction, Junction Boxes and Terminals"; "High Voltage Cables—35 kv. or Higher"; "Less Expensive Underground Construction for Residence Territory Using Armored Cable with or without Lead"; and "Three-Phase Secondary Networks." Each subject was later referred to a special sub-committee for further investigation. The revision of the Underground Systems section of the National Electrical Code was brought up for discussion and the consensus of opinion was that the matter should be given considerable thought with regard to its relation to the existing California law.

Eight subjects were discussed at the three sessions held by the meter bureau under the direction of G. H. Searle, chairman. The subjects discussed were as follows: "Education of Meter Men"; "Use of Oil in Meter Bearings"; "Maintenance of Relays"; "High Tension Metering for Operating Conditions"; "Proper Size Meters for Various Installations"; "Ironclad Installations Relative to Meter Testing"; "New Developments"; and "Test Periods." Chairmen to supervise the securing of further data on the subjects were appointed for the first seven topics. The

chairman of the bureau will give the eighth topic his attention.

Topics to be covered by the safety rules bureau, W. H. Talbott, chairman, were announced at the meeting of that bureau. Sub-committees to investigate and report on these will be appointed in the near future. It was the opinion of the bureau that a copy of the present revised Safety Orders of the Industrial Accident Commission of California should be secured in order that the members might read them over and offer objections to the provisions before they come up for public hearing. An effort will be made to obtain a type-written copy of the orders before the printing is done. The bureau favored the tying-in of work with the City Inspectors' Association and recommended that a member of each company be present at the association meetings.

COMING PACIFIC COAST ELECTRICAL ASSOCIATION MEETINGS

Executive Committee, Commercial Section—

Los Angeles, Calif.
Oct. 17-18, 1924

Appliance Bureau—Commercial Section—

Los Angeles, Calif.
Oct. 17-18, 1924

Customer Relations Bureau, Commercial Section—

Los Angeles, Calif.
Oct. 17-18, 1924

Electric Cooking and Heating Bureau, Commercial Section—

Los Angeles, Calif.
Oct. 17-18, 1924

Lighting Bureau, Commercial Section—

Los Angeles, Calif.
Oct. 17-18, 1924

Power Bureau, Commercial Section—

Los Angeles, Calif.
Oct. 17-18, 1924

Transportation Bureau—Commercial Section—

Los Angeles, Calif.
Oct. 17-18, 1924

Commercial Section—

San Francisco, Calif.
Nov. 19-21, 1924

Purchasing and Stores Section—

Del Monte, Calif.
Nov. 20-21, 1924

COMING EVENTS

American Institute of Electrical Engineers—
Pacific Coast Convention—Pasadena, Calif.
Oct. 13-18, 1924

Illuminating Engineering Society—
Annual Convention—Briarcliff Lodge,
Briarcliff Manor, N. Y.
Oct. 27-31, 1924

Commercial National Section, National Electric Light Association—
Hotel Rafael, San Rafael, Calif.
Nov. 19-21, 1924

ered by the fire prevention sub-committee. The bureau also discussed the use of uniform accident statistics charts and decided that charts and reports should be exchanged during the year with the view to later considering the adoption of uniform systems. Papers to be handled by the bureau members were discussed and assigned to individuals who will prepare them and have outlines ready to be presented at the January meeting.

The tentative outlining of the subjects for the year's study occupied the time of the meeting held by the inductive co-ordination bureau which was presided over by L. J. Corbett, chairman.

R. M. Peabody, chairman of the hydraulic power bureau, at the meeting of the bureau outlined correspondence with R. L. Hearn, chairman of the national hydraulic power committee, in which Mr. Hearn asked that if no subject had been selected, the bureau co-operate with the national committee on the subject of "Dams." The chairman

P.C.E.A. Commercial Section to Meet in Los Angeles.—The executive committee of the Commercial Section of the P.C.E.A. and the six bureaus of that section will hold conclave meetings in Los Angeles, Calif., Oct. 17-18. The meetings will be held in the club rooms of the Southern California Edison Company, Edison Building. The next meeting of the section has been scheduled for Nov. 19-21, and will be held in San Francisco in connection with the meeting of the Commercial National Section of the National Electric Light Association. This will also be a conclave meeting of the entire Commercial Section.

Portland A.I.E.E. Meets.—At a meeting on Sept. 24 of the Portland section of the American Institute of Electrical Engineers, C. P. Osborne, superintendent of light and power, Portland Electric Power Company, told of some of the events of the World Power Conference at London, from which he recently returned. F. H. Murphy, illuminating engineer, Portland Electric Power Company, gave a report on the annual convention of the A. I. E. E. in June at Edgewater Beach, Chicago.

Manufacturer, Dealer and Jobber Activities

Hope Webbing Company, Providence, R. I., has recently put on the market a new type of radio antenna known as Talking Tape. The new product is designed for use indoors with either tube or crystal receivers. Talking Tape is a woven combination of metallic and fiber strands with the metallic portion in parallel lines of even spacement. The textile feature protects the strands against wear and at the same time gives maximum flexibility. Because of the flexibility the antenna may be adapted to any space, being particularly suitable to stringing under tables, around the room behind mouldings, etc. The product may also be used to good advantage in various sized frames in which the tape is laced. The antenna is made in rolls of 100 ft. and is moderately priced.

The Johnson Washer Company, Oakland, Calif., has completed remodeling and rearranging its factory in that city. The company was started in 1903, in San Francisco and was incorporated in 1911. In 1921 the factory was moved to Oakland. Recent increase in demand for the factory's impeller washer has necessitated the enlargement and remodeling of the manufacturing facilities and this has now been completed. The company made some changes in its product, especially since the new management took charge, under the direction of F. B. Schuyler, president and general manager, A. W. Sterling, vice-president, and G. B. Schuyler, treasurer and sales manager. The company now makes four models of electric washer, one of which is equipped with sliding wringer, which is said to be the only machine of its type now manufactured. The Johnson washer is said to be the first ever made with a water heater built in as part of the equipment. The electrical unit is a Wagner motor. G. W. Rethschult, formerly with the Gillespie-Eden Corporation, has been appointed southern representative for the factory and will have headquarters at Los Angeles.

The Globe Electric Supply Company of Denver, Colo., has been designated as distributor in the Mountain region of Serv-el refrigerating equipment. Thomas M. Knight, formerly a technical executive of the Dupont company, has been placed in charge of the new department established by the Globe company.

The Ivanhoe Division of the Miller Company has established representation in the Rocky Mountain territory with semi-permanent headquarters in Denver, Colo., for R. H. Zeller, who has been covering the territory for the past year.

The Terry Steam Turbine Company announces the appointment of C. S. Henderson as district representative. Mr. Henderson's office is in the Call Building, San Francisco, Calif.

The Trumbull Electric Company, Plainville, Conn., has brought out a new switch of the quick break type. All live parts immediately become dead upon opening the cover and the fuse block is reversible.

Smile!

Two contests are being conducted by the Courteous Service Club Committee of the Pacific Coast Electrical Association. Fifty dollars in cash is to be distributed among the prize winners in these two contests which have just started.

Here are the two contests:

Contest I

Twenty-five dollars in prizes to be awarded for the best slogan, of not over ten words, for use by the Courteous Service Club during 1925. The first prize winner will receive ten dollars; the second, five dollars; and the third to sixth inclusive will each be awarded two dollars and fifty cents.

Contest II

For the best true story of not over two hundred (200) words in length illustrating the application of courtesy by an employee, the Courteous Service Club Committee of the Pacific Coast Electrical Association will award a first prize of ten dollars. A second prize of five dollars will be given for the second best story and the persons who submit the stories which shall be adjudged to rank from third to sixth best will each receive two dollars and fifty cents.

Anyone, except the members of the Courteous Service Club Committee and their immediate families, shall be eligible for participation in the contest.

The names of the winners, together with the winning contributions, will be presented in the Jan. 1, 1925, issue of the Journal of Electricity. Enter the contests now by sending your entry to Courteous Service Club, c/o Journal of Electricity, 883 Mission Street, San Francisco, Calif.

Contest Rules

The rules for the two contests are the same and are as follows:

1. The contest is open to anyone except members of the Courteous Service Club Committee of the Pacific Coast Electrical Association and their immediate families.
2. In Contest I the slogans submitted must be of ten words or less. In Contest II stories must be true and of two hundred words or less in length.

3. The judges will be the members of the Courteous Service Club Committee of the Pacific Coast Electrical Association and are as follows:

R. A. Balzari, Westinghouse Electric & Manufacturing Company; Victor Hartley, California Electrical Cooperative Campaign; M. S. Barnes, General Electric Company; G. C. Tenney, Journal of Electricity; H. L. Bronley, The California Oregon Power Company; O. S. Clifford, Truckee River Power Company; S. W. Green, San Joaquin Light & Power Corporation; E. G. McCann, Pacific Gas and Electric Company; Lloyd H. Hardy, Great Western Power Company; R. E. Smith, California Electrical Cooperative Campaign; Wm. Cyr, San Diego Consolidated Gas & Electric Company; E. B. Cummings, Southern California Edison Company; R. E. Bacon, Southern California Edison Company; W. A. Knost, Electric Club, Los Angeles; D. L. Scott, Los Angeles Gas & Electric Corporation.

4. Prizes to be awarded separately in each contest are as follows: First prize, ten dollars (\$10); second prize, five dollars (\$5); third to sixth prizes, inclusive, two dollars and fifty cents (\$2.50) each.

5. In case of tie the full amount of the prize will be awarded to all of the tying contestants.

6. Entries are to be sent to Courteous Service Club c/o Journal of Electricity, 883 Mission Street, San Francisco, Calif.

7. Entries must be received before midnight of December 1, 1924.

8. Prizes will be announced in the Jan. 1, 1925, issue of the Journal of Electricity and the winning contributions will be published in that issue.

9. No entries will be returned to contestants and the right of the Courteous Service Club to use slogans and stories shall be conceded upon filing of entry.



The Standard Electric Stove Company, Toledo, Ohio, announces the appointment of F. L. Green Company, Seattle, Wash., as distributors for the Standard line of electric ranges in the Northwest.

The P. A. Geier Company, Cleveland, Ohio, has just completed additions to its plant and the company now is in position to handle increased volume of its product, Royal vacuum cleaners.

The Harvard Electric & Gift Shop, formerly located at 2155 West Sixteenth Street, Los Angeles, has moved to Baldwin Park, Calif., where a location has been secured in a new building on El Monte Boulevard.

The Cullman Wheel Company, Chicago, Ill., has recently produced a low speed drive which may be adapted to churns, washing machines, grindstones, etc., as well as to farm pumps.

Personals

C. E. Skinner, assistant director of engineering of the Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., is visiting the Pacific



C. E. SKINNER

Coast offices of the company. Mr. Skinner was born on a farm near Redfield, Ohio, May 30, 1865, and was graduated with the class of 1890 from Ohio State University. Shortly after graduation he joined the Westinghouse organization as a machinist, in charge of the controller department, and supervised the construction of the first controllers turned out by his company. Early in 1891 he undertook the development of a system for the testing of insulation, and he had direct charge of all insulation testing. Later for a period of about ten years he had charge of all insulation specification work. Mr. Skinner's duties as assistant director of engineering, to which position he was appointed early in 1922, include research, standards and other work long these lines. He is known throughout the electrical world for his extensive research work, especially on insulation, and his efforts in this direction have had a marked effect on the development of electrical machine design. Mr. Skinner is a member of the Franklin Institute, the American Society for Testing Materials, the American Society of Mechanical Engineers, Fellow of the American Institute of Electrical Engineers, member of the Electric Power Club and of the Engineers' Club of New York.

Ray Murphy, Pacific Coast manager, **Paul I. Prietsch**, in charge of the miniature lamp department, and **C. E. Thompson**, merchandising expert, of the Westinghouse Lamp Company, San Francisco, Calif., were recent Los Angeles visitors.

C. W. Arthur, formerly connected with the Interstate Electric Company, New Orleans, La., has recently joined the Graham-Reynolds Electric Company, Los Angeles, Calif., and will be in charge of the recently organized radio department of that institution. Mr. Arthur was formerly in charge of the radio department of the Interstate Electric Company.

Charles W. Cross, president of the Ogden, Utah, chapter of the American Association of Engineers, and **M. D. Williams**, a past president of the chapter, have been appointed to committee memberships by the national organization. Mr. Cross was named a member of the committee on individual merit, and Mr. Williams holds a position on the committee on chapter activities.

Waldo E. Enns, a graduate in electrical engineering from the University of California, 1924, has been appointed assistant sales engineer for Clayton E. Ingalls, San Francisco, Calif.

Clayton E. Ingalls, representative of several Eastern manufacturers, has just returned from an extensive trip East during which he visited the various factories whose lines he represents.

A. D. Page, manager, **George Osborne**, assistant sales manager, and **J. W. McIvor**, manager of the publicity department of the Edison Lamp Works, Harrison, N. J., are visiting the Pacific Coast. They have already spent some time in California and will make their return through the Northwest.

Dean D. Clark, commercial manager of the Mountain States Telephone & Telegraph Company in Denver, Colo., and treasurer of the Electrical Cooperative League of that city, is making a tour of the Northwest in the interests of his company.

C. C. Fredericks, vice-president and general manager, and **J. R. Kearney**, vice-president in charge of electrical sales of the W. N. Matthews Corporation, St. Louis, Mo., and **Ben C. Holst**, California representative for the company, have just finished a tour of inspection in California. Mr. Fredericks and Mr. Kearney also visited various cities in the Rocky Mountain territory.

Ben C. Holst, California representative for the W. N. Matthews Corporation, St. Louis, Mo., has moved to larger quarters at 301 Rialto Building, San Francisco, Calif.

Robert S. Miller, manager of the Salt Lake City, Utah, district of the General Electric Company, has been made acting manager of the Denver, Colo., office of the company pending the return of Harry Randall. Mr. Miller will divide his time between the two districts until Mr. Randall's return.

Matt Whitney, of the Whitney Electric Company, Colorado Springs, Colo., has organized the contractor-dealers of that city to handle the Better Lighting Contest in that territory.

J. C. Davidson, of the Hendrie & Bolthoff Manufacturing & Supply Company, Denver, Colo., heads a committee charged with the responsibility of investigating and deciding on the possibilities of a combined radio and electrical show to be held in that city early next year under the auspices of the local electrical league and radio distributors.

L. T. Merwin, of the Northwest Electric Company, Portland, Ore., was recently in San Francisco, Calif., on business for his company.

O. B. Stubbs, of the Stubbs Electric Company, Portland, Ore., attended the recent convention of the Electrical Supply Jobbers Association held at Del Monte, Calif.

P. J. Aaron, manager of Fobes Supply Company, Seattle, Wash., attended the convention of the Electrical Supply Jobbers Association, held at Del Monte, Calif., Sept. 26-28, 1924.

Harry W. Lippert, for the past four years Pacific Coast representative of the Estate Stove Company, Hamilton, Ohio, has resigned to become affiliated with the field sales force of A. J. Lindemann & Hoverson Company, Milwaukee, Wis. Mr. Lippert will cover the territory from Salt Lake City, Utah, to the Coast. His headquarters will be at Room 245 Rialto Bldg., San Francisco, Calif.

H. C. Van Buskirk, of the Southern Sierras Power Company, Riverside, Calif., was a recent visitor to San Francisco.

F. S. Mills, Pacific Coast sales manager of Curtis Lighting, Inc., Chicago, Ill., has just returned from the factory at Chicago. During his eastern trip Mr. Mills also visited Milwaukee, Wis., Cleveland, Ohio, Pittsburgh, Pa., and New York City. At the request of the Allied Architects of Los Angeles, Calif., he investigated the lighting of art museums preparatory to making suggestions for the illumination of the new \$10,000,000 museum to be built at Los Angeles.

C. D. Monteith has just been appointed transportation engineer of the electric truck bureau of the Pacific Gas and Electric Company, San Francisco, Calif. Mr. Monteith was graduated in electrical engineering from Cornell University in 1922 and shortly thereafter became connected with the Northwest Electric Company at Portland, Ore. During his connection with this company he filled the positions of assistant to the superintendent of transmission line construction and, later, assistant superintendent of operation. Leaving the Northwest Electric Company, Mr. Monteith became commercial manager of the Missoula Light & Water Company, Missoula, Mont., which position he resigned to enter the army. As captain in the Signal Corps he was instructor in the army signal schools with the A. E. F. Upon his return to the United States he became commercial superintendent of the H. M. Byllesby & Company properties at Ottumwa, Iowa. Following this Mr. Monteith for several years conducted an engineering-con-



C. D. MONTEITH

tracting business at Phoenix, Ariz., which business he finally gave up to re-enter the utility field. Prior to his appointment as transportation engineer Mr. Monteith was connected with the San Joaquin division of the company and was stationed at Modesto, Calif.

T. E. Bibbins, president of the Pacific States Electric Company, San Francisco, Calif., is making an extended trip to eastern cities. Mr. Bibbins will spend some time in New York City, Schenectady, and other manufacturing centers.

E. Ward Wilkins, president of Par-trick-Wilkins Company, Philadelphia, Pa., will visit the Pacific Coast in the near future, visiting all of his jobbing connections. Mr. Wilkins was one of the founders and an early vice-president of the Electrical Supply Jobbers Association.

Ernest R. Woolley has been elected president of the newly organized Nathaniel Baldwin Sales Company, Salt Lake City, Utah. The company distributes radio material in the Inter-mountain territory.

W. A. Brackenridge, vice-president of the Southern California Edison Company, Los Angeles, Calif., was recently in San Francisco on business for the company.

Lewis A. Lewis, sales manager of the Washington Water Power Company, Spokane, Wash., has been elected president of the Electrical Service League of that city.

Louis R. Lee, chief engineer of the E. W. Clark Engineering Corporation, Cleveland, Ohio, was in Portland, Ore., two weeks in September conferring with the officials of the Portland Electric Power Company on next year's construction program.

George L. Myers, assistant to the president, **C. H. Gueffroy**, secretary to the president, and **C. W. Platt**, secretary and treasurer, Pacific Power & Light Company, Portland, Ore., attended the annual convention of the Pacific Coast Gas Association at Santa Barbara, Calif., Sept. 15 to 19. These men are also officials of the Portland Gas & Coke Company.

Norman Read, vice-president and general manager of the Colorado Power Company until its consolidation with the Public Service Company of Colorado, has resigned from the service of the latter company to become associated with the Electric Bond & Share

E. J. Power, for the past two years in the sales department of the San Francisco division of the Pacific Gas and Electric Company, has resigned to enter business for himself. Mr. Power will be located in Oakland, Calif., and will specialize in electric heating equipment.

S. H. Taylor, secretary of the Pacific Coast Electrical Association, has returned from an extensive trip to the East. Mr. Taylor attended Camp Cooperation IV, held at Association Island, N. Y., and also visited his boyhood home at Northampton, Mass.

O. B. Coldwell, vice-president and general manager of the Portland Electric Power Company, Portland, Ore., and **H. A. Rands**, project engineer on the Oak Grove development of that company, recently returned from a two weeks' trip along the Sky Line Trail in central Oregon.

Philip Apfel, president of the Electric Heating & Manufacturing Company, Seattle, Wash., has been elected vice-president of the Electric Club of Seattle. **Fred Lushington**, of the Lushington Electric Company, was elected treasurer and **P. L. Hoadley** was named secretary.

Ray W. Turnbull, assistant Pacific Coast manager of the Edison Electric Appliance Company, Portland, Ore., left on Oct. 1 for Honolulu on business for his company. He will return about the middle of November.

Frank J. Thompson has been appointed appliance salesman for the Great Western Power Company, San Francisco division of the company, specializing on domestic equipment.

T. E. Fitzsimmons, formerly representative of the Westinghouse Lamp Company in the Mountain territory, has been transferred to the Los Angeles, Calif., office of that company.

E. A. Scott, Denver, Colo., electragerist, is serving temporarily as secretary of the Denver Electrical Contractors' Association. Mr. Scott is also honorary secretary of the Denver Electrical Cooperative League.

Harry J. Martin, Northwest representative of the National Carbon Company, San Francisco, Calif., has been re-elected president of the Electric Club of Seattle, Wash.

L. M. McGinnis, formerly with Scott Plumbing and Electrical Company, Sacramento, Calif., has joined the staff of the Sterling Electrical Company of that city.

Elmer B. Read of the Illinois Electric Company, Los Angeles, Calif., has recently been made manager of the radio department of that organization. Mr. Read succeeds **Roy C. Saddler**, resigned, who is now connected with the industrial department, Los Angeles office, Westinghouse Electric & Manufacturing Company.

G. L. Thomas, formerly representative of the Radio Corporation of America in the Pacific Northwest, has recently succeeded **A. B. C. Scull** as manager of the Los Angeles, Calif., branch of the Radio Corporation of America. Mr. Scull is now in charge of the Radio Corporation of America's activities in San Francisco and the Pacific Northwest.

J. H. Kelly, **J. J. Hayes**, **C. G. Zokelt**, **W. M. Meacham** and **R. T. Reid** were elected directors of the Electric Club of Seattle at the annual election held recently.

C. E. Grunsky, president of the American Society of Civil Engineers and president of the Pacific Division of the American Association for the Advancement of Science, has received from the Rensselaer Polytechnic Institute of Troy, N. Y., the honorary degree of Doctor of Engineering. This honor was conferred at the celebration of the one hundredth anniversary of the founding of the Institute, held Oct. 3 and 4. Mr. Grunsky, whose work for



C. E. GRUNSKY

the past few years has been of a consulting nature, with headquarters in San Francisco, Calif., was a member of the first Panama Canal Commission. During the administration of President Taft he served as consulting engineer to the Secretary of the Interior. Mr. Grunsky is also president of the California Academy of Sciences at San Francisco.

W. A. J. Guscott, vice-chairman of the Denver Electrical Cooperative League, has been made acting chairman pending the return of chairman **Harry Randall**.

Obituary

Charles Edwards Downton, who for nearly thirty years has been prominently identified with the Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., died suddenly Sept. 28. Mr. Downton was a graduate of Purdue University in electrical engineering, with the degree of Bachelor of Science. He entered the employ of the Westinghouse company as a student apprentice. In 1896 he was placed in charge of the dynamo testing department, and in 1902 he became identified with the educational department, being placed in charge of the training courses for graduate students. When the Westinghouse company entered into the manufacture of munitions Mr. Downton was transferred to the New England Westinghouse Company at Springfield, Mass., where he remained until after the close of the war. Early in 1923 he returned to the main plant of the company at East Pittsburgh, where he has been identified with large electrification projects. Mr. Downton was born in Covington, Ky.



NORMAN READ

Company with headquarters in New York City. In his capacity as president of the Rocky Mountain division of the National Electric Light Association Mr. Read will be succeeded by **Charles A. Semrad**, commercial manager of the Public Service Company of Colorado.

Trade Outlook

San Francisco

The general tone in business circles continues to be optimistic. Fall and winter buying, particularly from the country districts, has strengthened and greater improvement is looked for as the season advances. Reports from the retail and jobbing trades indicate that their sales volumes are about on a par with the same period last year.

Activity in building, both residential and business, continues unabated, and there is a steady demand for structural steel. A good volume is also reported in cement sales. In general, collections are fair, though still backward in some lines, due probably to delay in returns from crops.

Improvement in the electrical industry, as a whole, is evident. Radio sales are particularly good. There is considerable activity in wholesale appliance buying, and jobbers are making shipments now for Christmas stocks. The activity in residence construction naturally reacts favorably on the sales volume of lighting fixtures and household appliances. Collections are reported fair.

The activity of the lumber mills in the Northwest has added to the movement of lumber ships, and the shipment of canned products through this port continues. The number of new enterprises starting in this district is encouraging evidence of business expansion.

Los Angeles

Considerable improvement was noted in all electrical lines during the month of September. The volume of retail sales gained considerably in September over previous months, and the wholesale and supply end of the business showed increased activity. Radio sales continue active, with an increase expected on account of the coming of winter. In other lines of business a cheerful tone is noticeable, many wholesale lines reporting a gradual strengthening in buying, both for immediate and future needs. A generally satisfactory volume of business is being done by department stores and other retail concerns. In both retail and wholesale trades collections are quoted as fair to good. Labor is plentiful.

Spokane

Mining conditions throughout the Inland Empire and in British Columbia continue exceptionally good. Practically all of the larger companies in the Coeur d'Alenes have announced substantial dividend payments for the current quarter, and there is a strong feeling that this industry will continue in good shape for some time to come.

The fruit growers in the Spokane Valley and other districts are now harvesting crops, with yield higher than was anticipated, and good prices.

Flour mills are working at good output, slightly higher than last year, due largely to heavy orders from outside

the territory. The six local packing plants continue their high rate of production, with slight decrease in prices for live stock noted.

Local building activities are pronounced, with a number of fairly large buildings and many homes about to be constructed. Real estate prices are very low, with a buyer's market.

Local woodworking plants are working at a good output, with a tendency to increase production. One new cut-up plant is about to be built and several concerns are about to make additions and improvements. Retail business is rather quiet, with considerable improvement expected after election.

Salt Lake City

While there has been no decided change in business conditions in the Intermountain section during the past few weeks, the tendency continues upward. Several important factors are contributing to increased industrial activity. Sugar factories are starting on their fall campaigns in the production of beet sugar, with the outlook favorable for a large output, and furnishing temporary employment to a large number of people. Several millions of dollars will be distributed by these institutions among the farmers for their beets.

Production from leading camps of the state warrants the prediction that Utah's silver output for 1924 will be very near the record figures established for 1923. Because of the excellent demand also for lead, silver-lead mines are maintaining production at a maximum in order to reap full benefit of the strong prices for these metals.

The outstanding feature in the activities of the electrical industry during the past month was the remarkable record established by the Utah Power & Light Company in the sale of kitchen lighting units. During its campaign, which covered the month of September, this company sold more than 11,000 of these units.

Denver

Business conditions in the Rocky Mountain region continue generally satisfactory although certain portions of Wyoming and a large part of New Mexico are suffering from financial failures. Colorado still continues unscathed and the month of October holds out additional satisfactory prospects for two specific reasons—first, the initial payments on the 1924 sugar beet harvest and, second, the building of an oil refinery in Fort Collins, the first to be constructed in the northern Colorado fields. Every day sees increased oil activity of a legitimate nature.

There has been no change in building activities. Denver leads the region, permits for September totaling \$3,002,150 with 883 permits. New residence construction established another record during the past month. Even with this gross volume of business, however, nearly every line active in any part of the construction reports a decrease in

net profits, indicating that competition is exceedingly keen and that estimates are inadequate.

Jobbers report increased buying from central stations, especially in appliance lines. The movement of construction material is normal. Radio is coming into its own again and with the prospects of KOA, the new broadcasting station in Denver, being on the air by December, higher priced sets are selling more readily.

Portland

Business in Portland and vicinity is gaining, with prospects for still further improvement. The weather, in the main, continues favorable for outdoor construction work, and a great deal of it is going on.

Central stations are carrying about 12 per cent more load than they did a year ago. This increase holds closely in all classes of industry with the best showing, other than in lumber, in manufacturing.

Lumber production is heavy and is expected to remain so for at least three months. The backbone of the present demand lies in the agricultural district, and heavy buying is expected to continue as long as the prices of farm products remain at their present basis. Prices have improved greatly since the summer slump, and mills are again doing a profitable business.

The movement of apples from the surrounding territory increased steadily during the last two weeks of September and is expected to continue heavy throughout the present month. The demand for Northwest apples continues good and prices are firm. The steady rise in the price of wheat is having its effect on the buying in agricultural districts.

Seattle

An increase in the demand for radio sets and equipment, also for lamps for both residence and industrial lighting, feature the Seattle electrical sales volume, with prospect that this condition will maintain for two months more. Sales of domestic appliances, particularly washing machines, ranges and percolators, are better at this time than during the year, with stocks good and deliveries coming through regularly. Housewiring devices and schedule material are moving about the same as heretofore, and the expected heavy demand for hydroelectric equipment has not materialized to any extent. Inquiries are coming in on farm lighting equipment, and this demand is expected to be greatly stimulated by the exhibits at the Western Washington Fair at Puyallup held the first week in October, and to gain in strength after harvest time. Price increases approximating 10 per cent, are noted in outlet boxes and covers, other prices holding steady.

Building construction continues unexpectedly active in Seattle due to seasonable weather prevailing.

Lumber sales continue to exceed mill production, and both domestic and export markets are showing a satisfactory demand. The fact that since the market began to revive last July there has been no overproduction is one of the most encouraging features of the lumber situation.

Journal of Electricity

Devoted to the Economic Production and Commercial Application of Electricity
IN THE ELEVEN WESTERN STATES

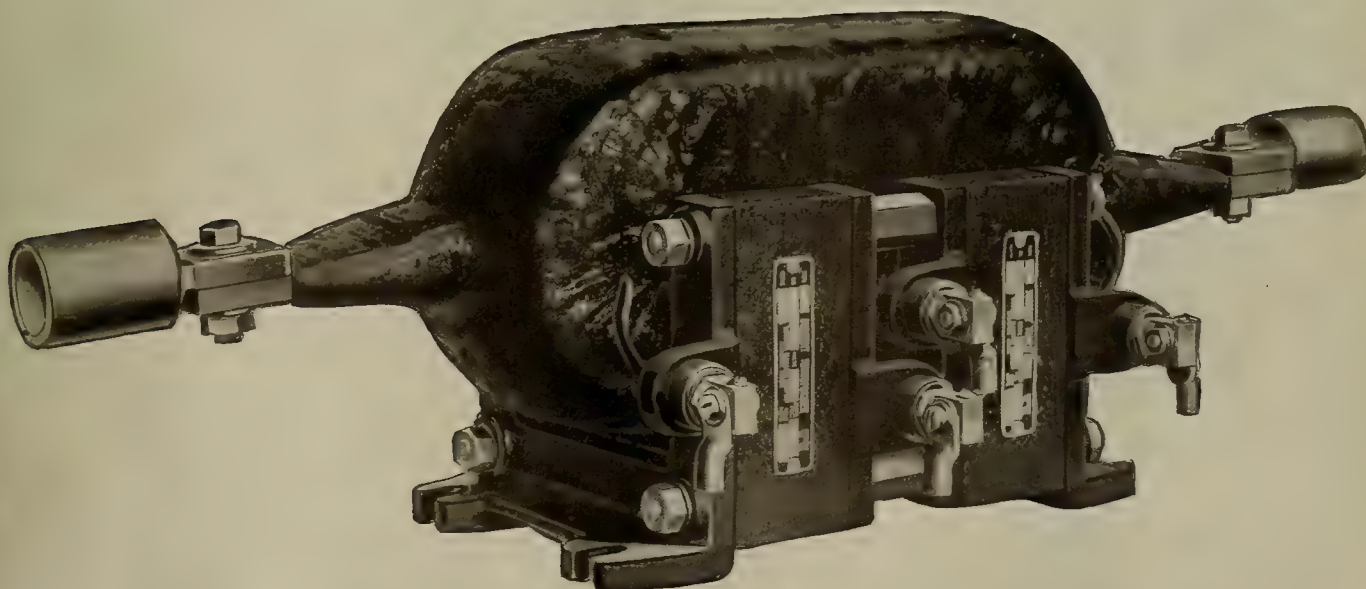
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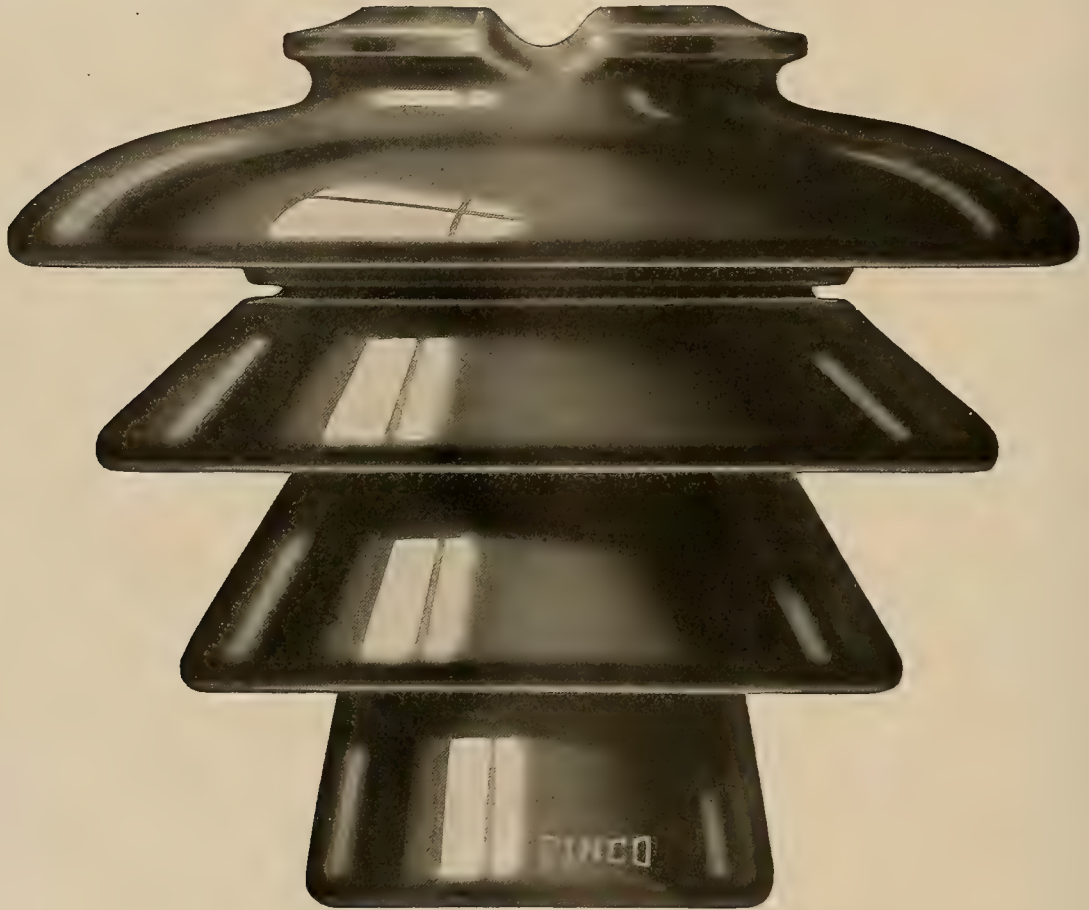


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IN THE ELEVEN WESTERN STATES

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NUMBER 9

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Don't Be a Slacker —Vote

TUESDAY, Nov. 4—election day—is of more than ordinary importance to the electrical industry in many of the Western states. In California and Washington the industry is threatened by inimical legislation. In many municipalities local measures contrary to the interests of the industry will be voted upon by the electors. In every state candidates who have declared themselves in favor of measures which threaten the welfare of the light and power business are running for office.

What are you going to do about it, Mr. Reader? Are you going to have time to vote? Are you going to see that all of your friends are properly informed regarding the importance of defeating certain measures and certain candidates and that they, too, vote?

The prediction has been freely made that if the vote is large, the California Water and Power Act, the Bone Bill and Mr. LaFollette will be defeated. A large vote can only be secured by seeing that every qualified elector goes to the polls and casts his or her ballot. Do your part. Vote, see that your employees and fellow workers vote and urge your friends to vote.

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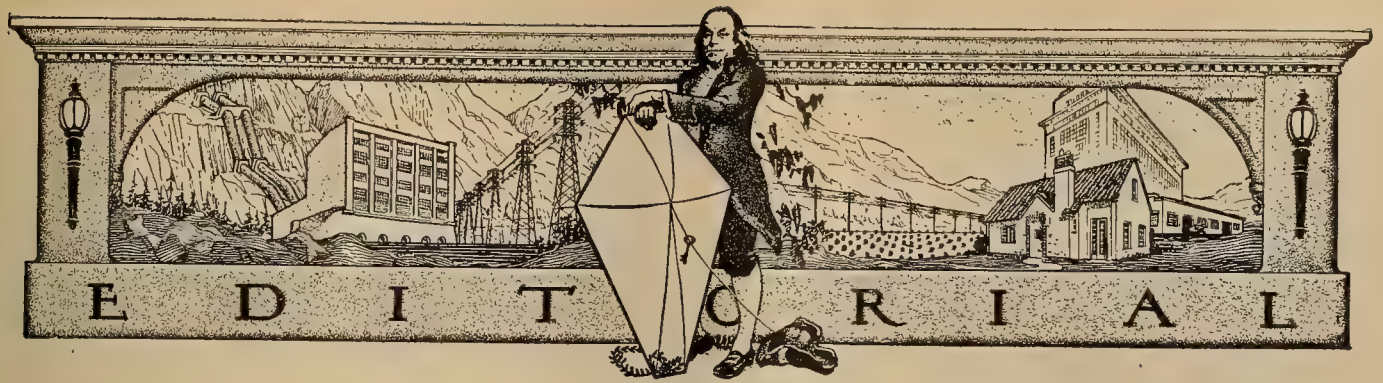
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Let's Smile

Through This Year, Too

ONE of the great ideas that was brought out by the Public Relations Committee of the Pacific Coast Electrical Association during the 1923-24 period was the Courteous Service Club movement, ordinarily known as the "Smiles" Campaign. It has been determined by the incoming Public Relations Committee that this movement, started so auspiciously, is not to be permitted to lose the momentum acquired in the past year. On the contrary, it is to be continued as vigorously as possible so that as the idea grows and to an increasing extent becomes an integral part of the personality of every member of the electrical industry, courteous service may be its outstanding characteristic.

To stimulate interest, prize contests have been evolved by the Courteous Service section of the Public Relations Committee under the leadership of R. A. Balzari, concerning which further particulars will be found on another page of this issue. Prizes are offered for slogans and for the best two-hundred-word true story illustrative of the value of courteous service. It is to be hoped that every organization and every individual within each organization will take this opportunity to heart and enter into this contest. The world would be a better place to live in if the thought back of this movement could be carried forward to the ultimate.

We Hope That

We have Helped

IF a personal note may be pardoned at this particular juncture, we cannot refrain from quoting the following comments on our Sept. 1 issue by the Sacramento, Calif., Bee of Sept. 24: "Among the latest evidences of selfish corporation activity in this regard is a special edition of the Journal of Electricity, a trade publication issued in San Francisco. This, the publishers announce, is to help beat not only the California Water and Power Act but a similar measure in the State of Washington."

Evidently the editors have builded to some purpose, for two columns in the Bee, mentioned above, seem to be devoted to an attempt on their part to controvert the arguments set forth in that issue of the Journal of Electricity. Mr. Creed's analysis of

taxation and its application to the subject seems to have created a good deal of excitement in the editorial offices of the Bee, for considerable space was devoted therein to viewing with alarm the growth and success of the Pacific Gas and Electric Company.

We must confess ourselves to be somewhat at a loss to understand why it is that advocates of public ownership attempt to construe a successful business enterprise as a menace to the people when it should be obvious to a twelve-year-old intellect that no enterprise could possibly be successful except on the basis of service to the people in the very highest sense of the word. Incidentally, the Bee states that it is entirely untrue that the California Water and Power Act calls for a state bond issue of \$500,000,000 or other great sum at any time and explains this interesting denial of that provision by stating that there is simply a limitation of \$500,000,000 as the total of all issues that may be made from time to time by the financial committee to carry out the purposes of the Act. It would appear that the Bee attempts to make a distinction without any difference.

Support the

Home Lighting Contest

THE Better Home Lighting Campaign is well under way. Reports from the many district headquarters throughout the twelfth region are coming in, indicating that a real interest is being aroused in this constructive movement.

The element of time has been a difficult problem to solve. Conceivably three months at least should have been available for the preliminary organization of the movement before the campaign was publicly launched. As a matter of fact, the preliminary organization plan was submitted to the committee of the California Electrical Cooperative Campaign a little more than a month ago. The officials of the campaign have had to work hard and fast in order to overcome the handicap brought about by the short time in which to get the story across. The individual members of the industry itself, regardless of whether or not they have any direct responsibility through serving on any of the committees, should not forget their own personal responsibility for the success of this movement.

VOTE AS YOU PLEASE — BUT VOTE

There is no reason why a resident of the Pacific Coast territory should not win the \$15,000 electric home. Surely this territory has had more experience in the use and application of electricity than any other section of the United States. The West is loud in proclaiming to the world its leadership in things electrical. Here is a chance to prove that electricity and its application is familiar to children of the family as well as to the grownups.

Who Shall Retail Radio?

CHANGING conditions in the field of merchandising have brought some new and strange bedfellows into the guest room of the electrical industry. Radio has ceased to be a curiosity. It is becoming more than a phenomenon in the transmission of the human voice and, in fact, of sounds of all kinds. The radio receiving set as a source of entertainment has become a recognized musical instrument due to the reception of entertainment features broadcast by the many stations which are being established throughout the country.

This situation has made "His Master's Voice" prick up its ears with a certain amount of dismay. There were two things that could be done under these circumstances. One was to fight and the other to annex. The latter, the line of least resistance and obviously the course of intelligence, seems to have prevailed. The music stores are becoming a constantly increasing factor in merchandising radio supplies. In this effort they are receiving the support of the manufacturers of talking machines, who, undismayed at the competition of radio with their own particular brand of canned music, are furnishing combination instruments, one side dispensing music of the canned variety from the conventional composition disc records and the other fully equipped as a radio receiving set.

Truly we are living in an interesting age and it behooves our electrical merchants to keep their ears close to the ground, study the tendencies of the times and prepare to meet new conditions as rapidly as changes occur.

The Crop of Taxes In North Dakota

SPEAKING of the socialistic idea and how it works out in actual practice, we commend to our readers an article entitled "Pay Day in North Dakota," taken from the Fargo, North Dakota, "Daily Tribune." At Bismark an interesting situation faces the tax payers. The voters are informed that taxes must be levied this year of approximately \$1,000,000 to meet the interest and principal upon the state-owned Bank of North Dakota, the mill and elevator and state real estate bond issues. This is part of the crop due to the sowing of the dragon's teeth of socialism in 1919, five years ago. All of these state industries—the banks, the homes, the flour mills and

the grain elevators have produced no earnings whatever.

The Home Builders' Association which was to bring about an Utopian existence for the North Dakotans is dead and buried and the tax payers have still to provide some \$300,000 in order that the remains may be decently interred. The Drake Mill has gone leaving nothing behind but the unpaid bills. The mill and elevator at Grand Forks is still pursuing its wobbly course at a loss of about \$2,000 daily, while the Bank of North Dakota is striving as best it may to make both ends meet, with the ends far, far apart. Bonds for this bank to the extent of \$1,000,000 fall due in 1929 and \$200,000 must be levied for the principal of the bonds and \$100,000 to meet interest payments next year. This is the yearly levy for the next five years.

Operating bonds for the mill amounting to \$500,000 mature in 1928 and 1929. For these there is another annual levy of \$100,000 which will continue for five years. Then there is \$2,000,000 in construction bonds for which a tax levy of \$172,000 also must be made to pay interest.

To Huxley is attributed the saying, "There is nothing so tragic in life as a beautiful theory wrecked by an ugly fact."

Reflections Regarding the Recent A.I.E.E. Convention

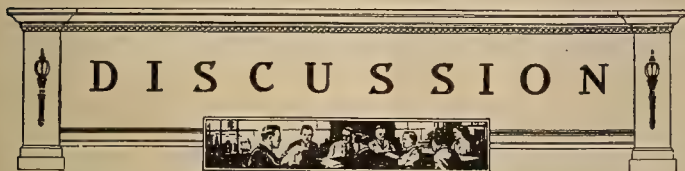
THE Pacific Coast convention of the American Institute of Electrical Engineers, held at the Hotel Maryland, Pasadena, Calif., during the past fortnight, merits more than passing attention. In the first place, it was the most successful regional meeting ever held by the Institute, a fact which is traceable to the high character and wide scope of the program and to the attendance of a large group of eminent Eastern engineers. The success of the program is partly due to the cooperation of the Meetings and Papers Committee of the New York headquarters. The counsel and cooperation of this group in preparing a program national in character should be utilized by committees in charge of future regional meetings.

A certain amount of criticism is due those central station companies that failed to send engineers to the convention. The representation from many of the Pacific Coast utilities was so small as to attract attention. The importance of such a convention cannot be overestimated and utility executives should deem it a duty to see that their engineers receive the benefit of the papers and discussions of the vital problems affecting the engineering branch of the industry. Executives themselves were conspicuous by their absence. It is highly important that the men in managerial positions in the large utilities familiarize themselves with the problems of the engineers and there is no better time and place than at such conventions. If formal invitations to attend are not received, then it should be the duty

VOTE AS YOU PLEASE — BUT VOTE

of the executive to see that such an invitation is forthcoming.

We benefit by experience. It is to be hoped that the next Pacific Coast convention of the Institute, which will be held in one of the Northwest cities, will profit by the experiences of past conventions and will be even more successful than the one just held.



Submits Data on Early Hydroelectric Plant in Western Colorado

To the Editor:

Sir: In the Oct. 1, 1924, issue of the Journal of Electricity, on page 231, under the heading, "The 'First' Hydroelectric Plant," you give some very interesting data, and also ask for additional information on this subject.

I am, therefore, taking the liberty of sending herewith, copy of an article published in "The Bulletin," the official family paper of the Utah Power & Light Company, under date of February, 1918, which may be of some interest to you.

A hydroelectric generating plant was installed during the winter of 1890 at the confluence of the Lake Fork and the Howard's Fork with the South Fork of the San Miguel River, in San Miguel County, Colorado, by L. L. Nunn and P. N. Nunn, to be operated in connection with the first successful commercial high pressure alternating current power transmission of the world, to furnish power to the Gold King stamp mill, situated 2.6 miles distant, at an elevation of twelve thousand feet above sea level. In the generating station, which was a small building constructed of wood slabs, a single phase, 3,000-volt generator was installed, of a capacity of one hundred horsepower, and a similar generator, to be used as a synchronous motor, was installed at the Gold King mill, and for three years the highest pressure transmission of the world was operated.

This installation was made on the site of the present Ames station; the one hundred horsepower, single phase Westinghouse alternator was belted to a six-foot Pelton water wheel under a 320-ft. head, the generator being separately excited, but the motor in the mill was self-exciting. These machines carried twelve part commutators, and were slightly compounded through current transformers upon the opposite spokes of their armatures, the latter being T-toothed and wound with twelve simple coils in cells of fullerboard and mica. The only instruments used were voltmeters and ammeters of the solenoid and gravity balanced type, and the circuits were closed with jaw switches and opened by arc-light plugs. The mill motor was brought to synchronous speed by a single phase induction starting motor which received its current at 3,000 volts. It was necessary to start this motor by hand, as its torque being zero at starting, was so feeble at low speeds that when cold it was only with the greatest difficulty it would pull up to speed without load.

The success of the pioneer undertaking can hardly be estimated by the present generation without being familiar with the tremendous difficulties overcome, among which might be mentioned the great variations in temperature found at an altitude of 9,000 ft. above sea level, where the station was built, ranging from 85 deg. F. to 40 deg. below zero, and the blizzards and avalanches and electric storms incident to that mountainous country, in addition to the free prognostications of prominent engineers that the experiment would prove an utter failure. When the report was made in the East that

one hundred horsepower was being successfully transmitted over three miles of number three copper wire, with less than five per cent loss, it was received with incredulity. From this original installation grew what was afterwards known as the Telluride Power Company's system, with which the writer became familiar, as general superintendent of the Colorado department, in the early part of 1900.

The old Ames plant was replaced in 1896 by two Westinghouse generators, each 600 kw., 60-cycle, 2-phase, 500-volt, direct connected to Pelton water wheels, one under a head of 918 ft. and the other under a head of 626 ft., with two banks of Westinghouse transformers of two each, of 375 kw. each, protected by Westinghouse type "C" arresters.

At the beginning of the year 1900 the installed capacity of the Telluride Power Company's plant in Colorado, and furnishing power to towns, villages and mines in San Miguel County only, totaled 1,200 kw., with about 40 miles of transmission lines, and a gross earning for the previous year of \$76,402, with net earnings of \$60,051.

The work of rehabilitating and extending the system and obtaining additional customers was actively begun in 1900, and during that summer the construction of a new power house was commenced at Ilium, six miles below the Ames plant, on the South Fork of the San Miguel River, and placed in operation in 1901. This plant was synchronized with the Ames plant and successful parallel operation obtained at a time when plants in other parts of the country, similarly situated, were having great difficulty with parallel operations. The generator was a General Electric 1,200-kw., revolving field, 3-phase, 1,000-volt, direct connected to two Pelton impulse wheels under a 500-ft. head. In the same year new transmission lines were built between the Ames and Ilium plants, and from Ilium to the town of Telluride and to the mines and mills at Pandora and Savage Basin. Later the transmission line between Ames and the town of Telluride was rebuilt, and extensions of transmission lines were built to various mines in San Miguel, Ouray and San Juan Counties, and to the town of Ouray, so that at the close of the year 1908, when the writer was transferred to the Utah department, the Colorado department of the Telluride Power Company had installed generating plants at Ames of 4,500 kw., Ilium, 1,200 kw., and Ouray, 300 kw., a total of 6,000 kw., all hand-regulated and requiring constant attention from the operator on shift; also 90 miles of transmission circuits.

It was necessary, in order to reach some of the mines and mills, that the transmission lines be constructed over the main range, at an altitude of about thirteen thousand feet, so that between the blizzards of winter and the lightning storms of summer, and the fighting of ice in the waterways in winter and the floods in summer, there was always a great element of variety and interest.

Collaborating with the ruling genius of this enterprise, L. L. Nunn, were found P. N. Nunn, chief engineer; Alexander J. Wurts, whose non-arc metal arresters assisted materially in the success of the undertaking; V. G. Converse, under whose direction the transformers had been designed and constructed, and who participated in the high voltage transmission experiments; Ralph D. Mershon, who also assisted in the transmission experiments; and the late James Campbell, president of the company, whose unwavering financial support made possible the continuation of the work through many trying periods.

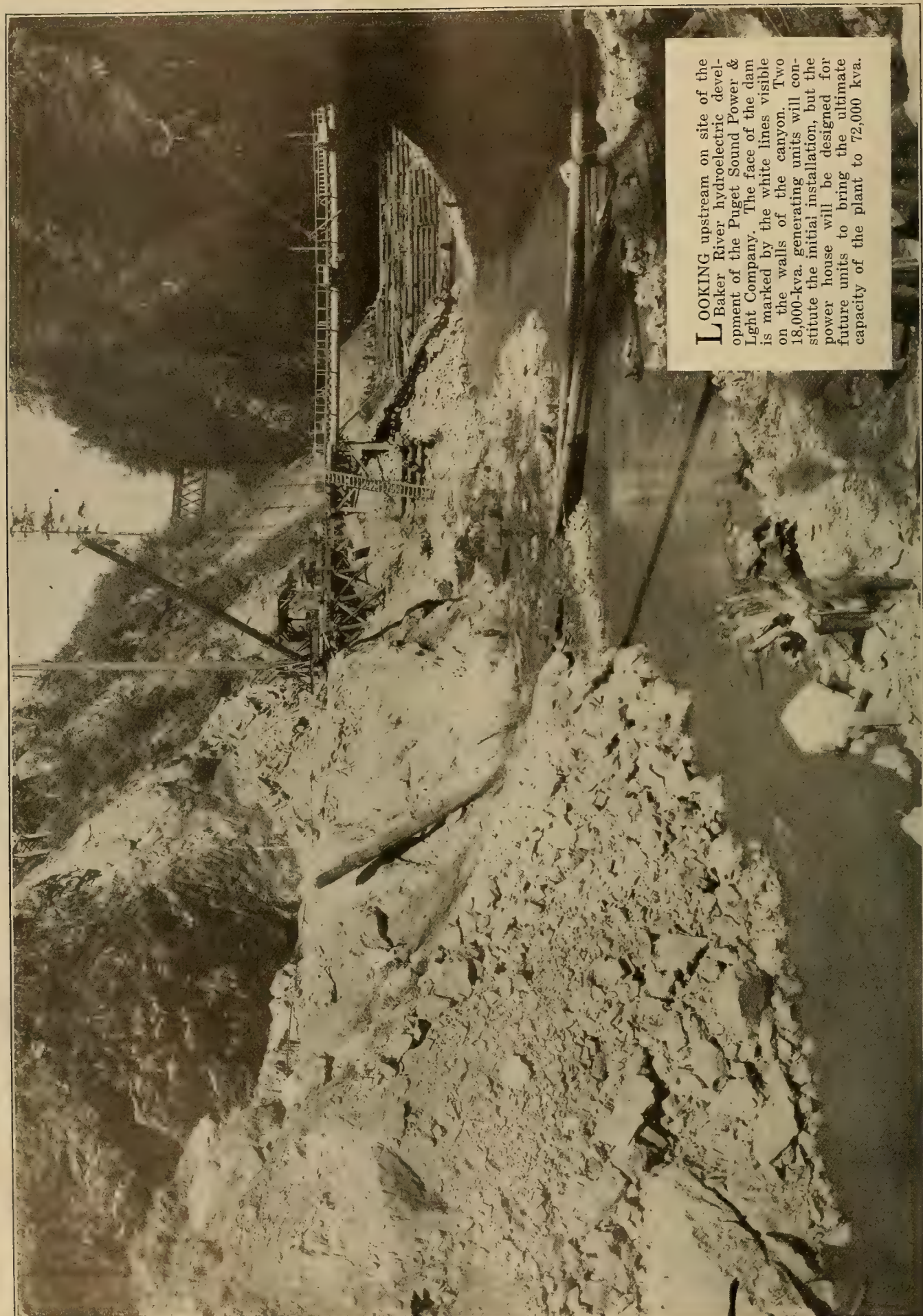
This property is now owned and operated and forms a part of the system of the Western Colorado Power Company.

COOPER ANDERSON,
Superintendent of Power,
Utah Power & Light Company.

Salt Lake City, Utah.
Oct. 9, 1924.

(EDITOR'S NOTE: The above contribution is in response to an appeal for data covering the early hydroelectric installations in the West, regarding which their is considerable argument and dispute. In order for the record to be as complete as possible we would appreciate further data from our readers regarding other installations with which they are familiar.)

VOTE AS YOU PLEASE — BUT VOTE



LOOKING upstream on site of the Baker River hydroelectric development of the Puget Sound Power & Light Company. The face of the dam is marked by the white lines visible on the walls of the canyon. Two 18,000-kva. generating units will constitute the initial installation, but the power house will be designed for future units to bring the ultimate capacity of the plant to 72,000 kva.

Pasadena Convention of A. I. E. E. Discusses Problems of Engineers

IN the character and scope of the program and in attendance, which reached the gratifying total of 350, the annual Pacific Coast convention of the American Institute of Electrical Engineers held at Pasadena, Calif., Oct. 13-17, 1924, was the most notable meeting held by electrical engineers in the West, if not in the entire country. With a delegation of fifty eminent engineers in attendance from the East and with a fairly representative registration from the Pacific

Coast utilities, especially those in the immediate vicinity of Pasadena, the many papers on the important problems confronting the engineering branch of the industry today were the subjects of free and interesting discussion.

All of the convention sessions were presided over by President Farley Osgood, vice-president and general manager of the Public Service Company of New Jersey. During the course of the convention a high tribute was paid past president Harris J. Ryan for the interest he has taken in the affairs of the Institute and his work in leading it through the successful year just terminated. At the reception given to President Osgood Monday evening, Professor Ryan was presented with a beautiful painting as a token of the esteem in which he is held in the minds of his friends and co-workers.

This is the first Pacific Coast convention in which the Meetings and Papers Committee of the Institute headquarters in New York has actively participated in the preparation of the program and the high caliber of the papers presented and the interest with which they were received demonstrated the success of this plan. Because of this the convention assumed a truly national aspect.

The opening session of the convention was presided over by Royal W. Sorensen of the California Institute of Technology, general chairman of the convention. Hiram W. Wadsworth, chairman of the Board of Directors, City of Pasadena, welcomed the delegates to the city. President Osgood in his general address stressed the significance of the annual Pacific Coast meetings and especially the attendance of engineers from other sections of the country, seeing in this fact the binding together of the nation by means of scientific inventions which shortened distances and linked communities. He urged that

***I**N many respects the most notable convention of the American Institute of Electrical Engineers ever held on the Pacific Coast, the sessions at Pasadena, Calif., October 13-17, 1924, brought out the largest attendance in the history of western meetings of the organization. The program was of a character worthy of a national gathering. The interest in the papers was keen and the discussion spirited. The convention will go down in history as one of the most successful ever held by the Institute.*

the Institute start a determined movement for the establishment of a research fund, believing that \$20,000,000 was not too large a sum for that purpose. He also spoke of the need for participation by engineers in city, state and national government.

Prof. Harris J. Ryan of Leland Stanford Jr. University delivered the principal papers before the morning session. In addition to his own paper on "The Hysteresis Character of Corona Formations"

Professor Ryan presented a paper on "A High Voltage Wattmeter" by J. C. Clark and C. E. Miller, and one on "Power Measurements at High Voltages and Low Power Factors" by J. S. Carroll, T. F. Peterson and G. R. Stray, all members of the electrical engineering staff at Stanford University. Professor Ryan's paper brought out the following conclusions:

1. Sixty-cycle corona in all ordinary circumstances develops the character of a gas dielectric hysteresis.
2. The values of crest voltages are controlling in respect to losses by corona formation.
3. Critical voltage can have a definite value only when the brush discharge pattern in corona formation is stable. Its value should be understood to be given by the product of the maximum critical voltage and the irregularity factor.
4. Irregularity factor should be understood to be the ratio of the average to the maximum electric intensity of the field adjacent to the high-voltage conductor.
5. The rational corona loss relation is given correctly by the equation

$$P = 4 f C (E^2 - E_0 E_0)$$

only within those limits of full corona formation wherein the capacitance value and brush pattern remain fixed.

6. Local corona loss varying from 0 to 8 kw. per mile depends upon too many variable factors to permit calculation without the use of knowledge to be obtained only through a large amount of further study by measurements.
7. The strong ion-formed fields that are responsible for the corona hysteresis are the cause that routes the 60-cycle discharge by the shortest path between electrodes. Without such fields, as in radio frequency discharges, the discharge routes must be along the tubes of force of the original electric fields.

The other two papers presented by Professor Ryan dealt with the laboratory method used in measuring power at high voltages and low power factor and especially a high voltage wattmeter developed by Professor Ryan and his associates for this purpose.

The Los Angeles Electric Club met with the convention delegates at noon and approximately 400

attended the luncheon which was addressed by President Osgood on the subject, "The Electrical Industry and Civilization."

"Fair Weather Corona Losses at 60 Cycles" was the title of a paper presented Monday afternoon by J. C. Clark of Stanford University and F. F. Evanson of the Benson Lumber Company, San Diego, in which the authors outlined the experimental methods used in the laboratory for determining the proper conductor for lines of given voltage with special reference to the electric characteristics, notably corona losses. The results of numerous tests were presented both numerically and graphically.

A description of the physical and electrical characteristics of the Pit-Vaca 220-kv. line of the Pacific Gas and Electric Company was outlined in the paper presented by Roy Wilkins of that company on "Corona Loss Tests on the 202-Mile, 60-Cycle, 220-Kv. Pit-Vaca Transmission Line." Corona loss tests were made at both the power house and substation end of this line and the losses were found to follow the exponential laws in three distinct phases: below visual corona, visual corona, and visual corona with losses sufficiently high to produce voltage distortion. At no time did the losses follow a quadratic law.

C. Francis Harding, head of the school of electrical engineering, Purdue University, Lafayette, Ind., presented a paper on "Corona Losses Between Wires at Extra High Voltages" which outlined the results of tests conducted during the past year at that university. An empirical equation was derived for approximating quite closely the relation between corona loss and voltage at different spacings. The paper is merely a progress report of work which is being done and will be enlarged later.

The discussion of this group of papers, which was participated in by practically all of the authorities on corona in this country, brought out the fact that existing data on corona are exceedingly contradictory owing to the extreme difficulty to get the same experimental conditions in all of the laboratories where experiments have been conducted. However, if all results are set down on the same comparative basis, it is found that they follow the quadratic law of Peek except where conductors are extremely rough or pitted or where the voltage is near the flashover point.

Lightning was the topic under discussion at the Tuesday morning session of the convention. Dr. J. B. Whitehead, Johns Hopkins University, Baltimore,

Md., presented a paper on "Corona as a Lightning Arrester" in which he discussed the suggestion that the properties of high-voltage corona might be utilized as a protection against lightning and other similar disturbances in transmission lines. Experiments were described indicating a relatively simple and inexpensive method of equipping transmission lines to take advantage of the protective properties of corona without incurring its disadvantages. The general subject of lightning was discussed in a paper by E. E. F. Creighton, consulting engineer, General Electric Company, in which the conclusion was reached that lightning is oscillatory in character. Starting with experimental value of 4,500 volts per cm. as the potential gradient of the electrostatic field between a thundercloud and earth some astonishingly high values for the factors involved in lightning resulted. The calculations in the paper showed that the average current in a lightning stroke may reach as high as one and a half million amperes. The energy stored in the electrostatic field is 700 kw-hr. The maximum power expended in the discharge is 860 billion kilowatts. The frequency of the stroke calculated, which was one mile long, is about 50,000 cycles per sec.

"Lightning and Other Transients on Transmission Lines" was the title of a paper presented by F. W. Peek, Jr., General Electric Company, Pittsfield, Mass., in which an attempt was made to co-ordinate much of the research and study which has been made of lightning and its effect on transmission lines, so that the various types and magnitudes of some of the predatory voltages to which transmission lines are subjected might be determined. Methods of protection from such voltages were discussed, as well as the design and economics of protective apparatus. Recent work of the author with his lightning generator and model transmission lines with and without grounds were also presented.

Great interest was displayed in the discussion of this group of papers. It was the consensus of opinion that considerably more study and experiment be devoted to this important subject. The experiences of many of the operating companies with lightning were recited. During the course of the discussion the subject of grounding of transmission lines, towers and power houses received considerable comment.

The experiences of the Southern California Edison Company with transmission at 220 kv. were dealt



Delegates and guests in attendance at the annual Pacific Coast convention of the

with in a group of five papers presented by Edison engineers, for the benefit of companies which are considering operating at this voltage. H. Michener described the system and gave some interesting data on operating experiences, especially with relation to flashovers. The conclusion reached by the company is that these disturbances are caused by birds and the protective steps taken were described. The application of balanced relays as a means of automatic protection from flashovers was discussed by E. R. Stauffacher. The economic studies made in relation to the type of tower and the location of the line and choice of a cable were described by C. B. Carlson and W. D. Shaw. Vibration, which has caused considerable difficulty on some sections of the line, and the steps taken to combat this phenomenon were described by J. M. Gaylord. The location of the line and the right-of-way were described by V. D. Elliott. H. A. Barre, executive engineer of the Edison company, summed up the experiences following the presentation of this group of papers.

"Interconnection of Power Systems in the Southeastern States" was the subject of a paper prepared by W. E. Mitchell, assistant general manager, Alabama Power Company, Birmingham, Ala. The paper described the Southeast interconnected system and the methods of interchange employed by the operating companies included in the system. Two important features to Pacific Coast engineers were included. An operating sub-committee has been formed with one representative from each company's operating department. It is the duty of this committee to exchange information regarding load and rainfall conditions, energy generated on each system by steam and hydro and to discuss such matters as voltage regulation, load dispatching and system protection. As a further step an engineering sub-committee has been formed for the purpose of studying the possibilities of a co-ordinated development program with the object of avoiding construction of two or more plants by different companies at the same time in case one plant and interchange will handle the load. In this manner one company might save the fixed charges on a very large investment for two or three years and another load its new development from the date of completion with not greatly increased operating charges. Types of contracts used by the various companies were also discussed.

What is considered the best practice in the man-

ufacture of large steam-turbine generators was discussed in a paper by W. J. Foster, E. H. Greiburg-house and M. A. Savage, all of the General Electric Company, Schenectady, N. Y. A 62,500-kva., 60-cycle generator was described together with test data. The losses and ventilation problems for equipment of this type were discussed, and predictions made as to probable sizes at given speeds which may be expected in the future.

R. J. C. Wood of the Southern California Edison Company presented a paper on "Heating of Large Steel-Cored Aluminum Conductors" in which the temperature rise in large cables as a limiting factor in their use was discussed. Experiments were made with samples of cable considered for the new 220-kv. Vincent line between Big Creek and Eagle Rock substation and results tabulated with a view of determining the relation between temperature rise and sag.

Considerable discussion resulted from the reading of the paper on "The Possibility of Flashovers Due to Low High-Frequency Efficiency in the Insulator System Rather Than Lack of Unit Factor of Safety or Poor String Gradient" by A. O. Austin, Ohio Brass Company, Berberton, Ohio. It was the consensus of opinion of those present that such frequencies as were discussed in this paper are not obtainable on transmission lines. A new type of insulator was described in a paper on "The Development of a Suspension-Type Insulator" by Harold B. Smith, professor of electrical engineering, Worcester Polytechnic Institute, Worcester, Mass. In the form described it consists of two metallic terminal members to suitably distribute the electric flux and an insulating, impregnated wood (or other material) mechanical strain member which is concentric with the hollow electric field produced between the metallic terminal members. The unit described is designed for 110-kv. operation, with two units in series for 220 kv. and three units for 330 kv. The merits of the insulator will be determined after further studies and life tests.

Inspection of Norman Bridge Laboratory

Wednesday afternoon was spent on the campus of the California Institute of Technology where an opportunity was afforded the delegates to inspect the Norman Bridge Laboratory of Physics and the new million-volt laboratory. A series of papers prepared by members of the staff of the Norman Bridge Lab-



f Electrical Engineers at the Hotel Maryland, Pasadena, Calif., Oct. 13-17, 1924.

oratory on the experiments which are being conducted under the direction of Dr. Robert A. Millikan was read before the delegates. These tended to show the relationship which exists between the engineer and the physicist and how the experiments performed by the latter are later of value to the engineer in his practical work.

Before demonstrating the recently completed million-volt laboratory Royal W. Sorensen, professor of electrical engineering, read a paper describing the laboratory, its equipment and the characteristics of the transformers. This is described on p. 242, Oct. 1, 1924, issue of *Journal of Electricity*.

Address on Astronomy of the Atom

In the evening Dr. Millikan addressed the convention delegates on the astronomy of the atom. He pointed out that atomic mechanics differs from astronomical mechanics with only two exceptions, first, in the limited number of orbits, and second, in the effect of radiation resulting from changes in orbits. He traced the results recently obtained through the use of high-voltage, high-vacuum, hot-spark spectroscopy. This has enabled him to go two octaves further into the violet spectrum. Such hot sparks, he said, possess the property of stripping off the valence electrons of atoms and experimental results have substantiated and almost conclusively proved the orbital theory of atomic structure and the quantum theory. It is now possible, he declared, to analyze the light from any source and determine the nature of its formation and predict from the orbital theory the spectroscopic lines observed.

The sessions Thursday were given over to a group of papers dealing with the application of electricity to industry. In a paper entitled "Electrical Applications to Irrigation Pumping," R. H. Cates, Southern California Edison Company, Los Angeles, Calif., described the tests which have been made of electric pumping installations on the lines of his company and outlined the types of installations which have been found most successful for various sets of conditions. Recent developments in electric logging and sawmill equipment and its application to the fir mills in the Pacific Northwest were presented by J. L. Wright, General Electric Company, Portland, Ore. In addition to outlining the various classes and types of equipment, the paper lists the complete motor installation for a main sawmill and a planing mill together with the control equipment and the types of drive. "Electricity's Contribution to the Steel Industry" was the title of a paper read by K. A. Pauly, General Electric Company, Schenectady, N. Y. A brief outline of the processes involved in the production of steel was followed by a discussion of the characteristics of the various rolling mills and the types of motors used to drive them. The author believed that the greatest contribution of electricity to the steel industry was the provision of a means for utilizing the waste gases from blast furnaces in the generation of electric power.

The electrical equipment in the Consolidated Mining and Smelting Company's zinc plant at Trail, B. C., was described in a paper read by R. N. Lockyer, assistant superintendent, West Kootenay Power

& Light Company, Bonnington Falls, B. C. Of chief interest in this paper was the discussion of the load characteristics of this installation and the advisability of using motor-generator sets rather than rotary converters for producing the direct current necessary in the electrolytic zinc reduction process.

"Electrometallurgical Applications" was the title of a paper read by J. L. McK. Yardley, general engineer, Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa. In this paper the author discussed the field of engineering in which the electrical, chemical and metallurgical engineers are interested. Smelting and electrolytic methods for the production of metals were compared and data presented on plants and equipment for the production of zinc, iron, copper, nickel and aluminum were included.

In the discussion which followed this group of papers it was pointed out that the power company and the electrical engineer should be in a position to advise industrial consumers on all classes of power applications instead of making it necessary for industries interested in such applications to go to men in other branches of engineering for information. It was urged that engineers devote more study to the evils of poor power factor, especially as it is affected by over-motorization. One engineer called attention to the success of the power factor rates imposed during the war and suggested that rate schedules include a bonus or a penalty for good or poor power factors.

The Program of the Third Day

Three papers were presented Friday morning dealing with the progress in telephone transmission. A paper by J. R. Carson, American Telephone & Telegraph Company, New York, entitled "The Guided and Radiated Energy in Wire Transmission" described recent studies which have been made in connection with the radiation phenomena. "Practices in Telephone Transmission Maintenance Work" by W. H. Harden, American Telephone & Telegraph Company, New York, described the test methods which have been devised for locating troubles and the methods of correcting them. L. P. Ferris and R. G. McCurdy, American Telephone & Telegraph Company, New York, presented a paper on "Determination of Magnitude and Location of Telephone Circuit Unbalances."

In a paper, "Street Lighting—A Municipal Problem," Rich D. Whitney, professor of electrical engineering, Syracuse University, and consulting engineer, City of Syracuse, N. Y., approached the subject from the standpoint of the municipality rather than that of the engineer, manufacturer and utility. He told of the results of a study of street lighting in the City of Syracuse and the standards which were adopted. General conclusions derived after a conference between the mayors of New York and the Empire Gas & Electric Association were also presented including a set of minimum standards for various classes of street lighting.

The banquet Friday night was held in honor of Thomas A. Edison, with approximately 300 in attendance. S. G. McMeen acted as toastmaster. There

were nine speakers. George E. Decker, Southern California Edison Company, spoke on "The Beginning of Long Distance Transmission," giving the history of the San Antonio River plant at Pomona, the first hydroelectric station to use a transmission voltage higher than the generation voltage. "Pioneering Development of the Electric Lamp" was the title of an address by Samuel Heins. O. H. Ensign, Los Angeles, spoke on "Early Developments of Electrical Apparatus." The place of the engineer in the progress of civilization was outlined by C. W. Koiner, city manager of Pasadena, in an address entitled "The Engineer as a Pioneer in Public Service." "The Ethics of Our Engineering Pioneers" was the subject of E. F. Scattergood, Los Angeles Bureau of Power and Light. Dr. J. B. Whitehead, Johns Hopkins University, spoke on "Fundamentals in Education." "America's Opportunity as a Pioneer Abroad" was the subject of an address by C. E. Skinner, Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa. The other two speakers were H. T. Plumb, General Electric Company, Salt Lake City, Utah, and H. A. Barre, Southern California Edison Company, Los Angeles.

A varied entertainment program was prepared for the delegates and their wives. This comprised trips to points of interest in the vicinity of Pasadena, including a visit to the Mt. Wilson Observatory and a golf tournament.

Attitude of Federal Power Commission Toward Municipalities Defined

SINCE the attitude of the Federal Power Commission toward the development of power by public agencies is coming in for comment in the course of the political discussion over public ownership, O. C. Merrill, executive secretary of the commission, has made the following statement in the hope that the basic facts of the Commission's attitude may be understood:

"Since the water power act has been in effect, forty-six applications totaling 2,827,000 hp. have been filed by states and municipalities. The only state applications came from Illinois and cover two projects. The remaining forty-four were sought by municipalities. Seventeen of these projects have been approved. Their total capacity is 411,455 hp. They are located in nine states and in the territory of Alaska.

"In addition to the seventeen projects, four other municipal applications are pending, which bring the aggregate up to 675,000 hp. These cover all projects likely to be developed at early dates.

"Fifteen of the applications were filed by the City of Los Angeles. They involve the installation of 1,660,000 hp. Because of the uncertainty as to the action Congress may take on legislation proposing to give the city rights on the Colorado River, Los Angeles has not been in a position to determine the exact course its municipal development will follow. If rights on the Colorado should be secured, un-

doubtedly some of the developments proposed on the Kern River and in Owens Valley would not be necessary. In view of that situation, the Commission has allowed those applications to remain pending. The Los Angeles applications for rights on Kings River involve lands which are included within the boundaries of a proposed national park. The applications of the city, which have been suspended indefinitely, propose a development of 992,000 hp., or more than ten times the present capacity of the city's plants.

"A water power development proposed by the City of Everett would have interfered with the maximum development of the resources of the stream. An application by the City of Louisville was refused because it would mean the duplication of existing facilities and would require the expenditure of an amount larger than that which the city is authorized to undertake.

"Census figures show that in 1922 private stations had 93.7 per cent of the total prime-mover capacity; 94.7 per cent of the investment is plant and equipment, and 95.3 per cent of the energy output in kilowatt-hours. The ratios have changed but slightly in the twenty years of record, although the trend is toward an increase in the proportion of the output from private central stations. The number of municipal stations has increased, but for the most part they are small. The average installation in privately owned central stations in 1922, was ten times as great as that in the average municipal station. That ratio is increasing. In 1917 eighty-three per cent of the municipal stations were of less than 500 hp. In that year 20 per cent of the so-called municipal stations generated no power, but purchased it from commercial concerns. The whole trend now in electrical development is away from localized service and toward interconnection with distribution over areas larger than municipalities, and even larger than the area of individual states.

"The water power act in extending a preference to states or municipalities, requires the Commission to make sure that the plans provide for a development which will 'conserve and utilize in the public interest the navigation and water resources of the region.' It will be noted that the statute does not provide for the construction or the financing of power developments by the federal government. There is a provision for the Commission to recommend any project which should be undertaken by the federal government itself. The only action taken under that portion of the law was the recommendation that the development of Great Falls on the Potomac River be undertaken by the United States. The power developments undertaken by the federal government, for the most part, have been incidental to some other activity, such as the operation of locks, or in connection with the irrigation of lands.

"While the Commission must take cognizance of the trend away from the development of power by public agencies, nothing the Commission has done, or nothing it has in contemplation, will militate in any way against the letter or the spirit of the law in its application to power development by public agencies."

A Kitchen Lighting Campaign That Was Successful

By Verne H. Moon*

Appliance Sales Superintendent,
Pacific Power & Light Company, Portland, Ore.

IN the hope that interested companies and individuals may profit from the experience of the Pacific Power & Light Company in its kitchen lighting campaign last spring, this story of the campaign, with observations as to how it might have been improved, is presented. It should be borne in mind that this campaign is not to be considered as a model after which to pattern. Many obstacles were encountered in promoting the sale of kitchen units, and mistakes were made which we believe the information contained herein will help others to avoid.

The campaign was conducted for a period of six weeks, beginning about March 1, and followed the general plans as recommended by Eastern utilities and manufacturers who had previously conducted successful campaigns in Eastern sections of the country.

In view of the success reported by Eastern companies in kitchen lighting campaigns, the company felt that it was justified in expecting that a similar market existed in its territory. The most casual survey of lighting conditions in kitchens proved conclusively that there was definite need for better lighting in the home's workshop. The usual kitchen lighting installation was found to be either inadequate in the intensity of light delivered on the working plane; or, if the intensity was sufficient, it was too often accompanied by a disturbing glare. There seemed to be no question but what a market existed for some unit which would correct lighting conditions in kitchens. It was felt, also, that information on proper kitchen illumination had not been made available to the consumer. This responsibility should rest on the shoulders of those in the electrical industry.

In selecting a suitable unit for resale to its customers the company attempted to obtain one which embodied first of all good lighting practice. While being in accord with good lighting practice, the unit must be of suitable design to harmonize with condi-

THE approach of the shorter days of fall and winter, when activities of the electrical industry turn to illumination questions, makes the accompanying article particularly timely. Mr. Moon's company was among the first to conduct a kitchen lighting campaign in the West, and because of the fact that other Pacific Coast companies are considering such a campaign in the near future, it is thought that the story of his experience, and his recommendations for improvements in the method of carrying on another such activity, will prove interesting.

tions ordinarily found in kitchens and of course manufactured by a reliable company. Such elements as finish, diffusion, simplicity of installation and price were also considered. It was the company's belief, however, that the most important of all was the quality of illumination resulting from the use of this unit, since the campaign was to be directed at better lighting conditions through the use of an improved unit.

It seemed apparent that if the campaign was to be a success the proposition

of better light for the kitchen must be placed intelligently before every residential customer on the company's system. It was therefore essential that some of the local sales organizations be augmented by additional sales people for the period of the campaign. The campaign was to be conducted for a period of six weeks and sufficient men were added to make a thorough canvass possible in that time. The Red-Spot unit of the F. W. Wakefield Brass Company with Ivanhoe glass was used in the campaign.

The help of the contractor-dealer was solicited for this purpose as it was believed that solicitation by the dealer, working in conjunction with the company, would not only facilitate the installation of the units but would offer the dealer a splendid opportunity for developing other lighting business.

Methods Used in Campaign

As has been stated, the campaign was conducted along lines found to be successful by Eastern utilities. Advertising was prepared in advance and consisted of ample space in local newspapers, enclosures with monthly statements and descriptive broadsides mailed directly to the customer. In addition, news stories appeared in local papers and each office was furnished with suitable window trimming materials for the display of the unit.

The newspaper advertising consisted of a series of five advertisements. The initial advertisement, announcing the campaign, was 50 in. in size and the remaining ones of the series 16 to 27 in. In the daily papers of the territory two advertisements appeared each week and representative weekly papers carried one each issue throughout the campaign.

*Excerpts from the report of the Lighting Bureau of the Commercial Section, Northwest Electric Light and Power Association presented at the annual convention of the association at Gearhart, Ore., June, 1924.

The advertising copy was so designed as to bring to the customer in simple form the story of better lighting for a kitchen rather than extolling the merits of the unit as a competitive article.

Shortly after the appearance of the first advertisement leaflets were enclosed in monthly statements and sent out to all residential customers. Next, a large descriptive broadside, supplied by the unit manufacturer, was mailed direct to the customer. Enclosed with this broadside was a postcard which, when signed, constituted authority to the company to place the unit in the customer's home on trial. The postcard was so worded that it constituted an agreement to purchase unless the customer notified the company to remove the unit before the trial period had elapsed.

The broadsides were mailed out in accordance with street routing of the customers and only in such quantities as could be directly followed up by active solicitation within two or three days after receipt of the broadside by the customer. The broadside not only described the unit itself, but made our offer to the customer very clear.

The company offered to install the unit, including a lamp of suitable size, on trial for a period of thirty days without cost to the customer. Should the customer then desire to purchase the unit an easy payment plan was available whereby he could pay 75 cents per month with his light bills for a period of ten months, making a total of \$7.50. If the customer desired to purchase the unit for cash a 10 per cent discount was allowed, making the price \$6.75. Should the customer not wish to make the purchase after having tried the unit the company agreed to remove its property and reinstall the light-

ing equipment as originally found without cost to the customer.

Sales meetings were held prior to the campaign with all members of the sales organization and the details of the campaign thoroughly covered. Each district was furnished with a set of instructions for permanent reference which dealt with the details of the campaign operation.

Prizes were offered to the salesmen making the best records during the campaign, in addition to which a selling commission of \$1.00 per unit was offered.

The salesmen were furnished with handy carrying cases which were specially built so that the unit could be conveniently carried and shown to housewives in their own kitchens.

Routine of Handling Sale and Installation

The district offices were instructed to prepare the broadsides for direct mailing to customers in advance and to mail them in such quantities and to such locations as could be covered easily and promptly by solicitation. The salesmen started on their solicitation about two days after the receipt of the broadsides by customers. The salesmen were furnished with cards showing names and addresses of the customers to whom broadsides had recently been sent.

The salesman approached the customer and showed the unit lighted in the customer's kitchen, giving her an idea of the difference in working conditions which would result with the installation of the unit. If the customer wished to take advantage of the trial offer the permit-and-agreement card was signed and returned to the office. From this signed



The company's window display at the Walla Walla, Wash., district office was typical.

permit-and-agreement card an installation card was made out and given to a local contractor as his authority to install the kitchen unit on the premises of the customer.

Upon the installation of the unit the customer signed the installation card and the contractor noted on the reverse side the wattage of the lamp removed and the wattage of the lamp installed and returned the card to the office, where he immediately received credit for his work in installing the unit. Upon the return of the signed installation card the unit was considered sold. This was done for purposes of simplicity in handling the account.

Commissions to salesmen and payments to contractors were made upon the basis of the signed installation cards.

to 1,683, being retained. Of this number, 245 were paid for by cash and the remainder of the purchasers took advantage of the company's easy payment plan.

A tabulation of the total wattage of all lamps removed and installed shows that for 1,683 units there was a total gain in connected load of 129,515 kw., or an average increase in kitchen lighting load of 76 watts per kitchen.

The company was naturally interested in estimating the value of the new business obtained in this way. Considering that the unit would be used throughout the year on an average of two and one-half hours per day, and figuring this use on an average of 7 cents per kw-hr., the increase in annual revenue to the company was approximately \$8,000 for the 1,683 units installed, which equals \$4.73 per year per customer. While the total amount of increased revenue is not startling, it must be remembered that this was attained without investment of one dollar in generating or distributing equipment.

The only feature then which remains to determine whether or not the campaign has really been profitable to the company is the cost of producing this additional business, or, in other words, the campaign costs.

"DAYLIGHT" YOUR KITCHEN

ONCE they
looked in the oven
by matchlight

by Enith Griffith



I REMEMBER my grandmother always had to light a match when she wanted to look into the oven to see how the bread was baking. But that was before the Daylight Unit.

NOW you can banish eye strain and dim, gloomy lights from the kitchen—those bugaboos that slow down work in so many homes. Let the Pacific Power & Light Company install a Daylight Kitchen Unit. A snap of the switch or a touch of the cord and the workshop of your home is flooded with a soft, mellow glow.

I FEEL sure that you will like the Daylight Unit. It's scientifically designed to throw white, diffused light into every corner of the room. It will banish shadows, relieve eye strain. The worst enemies of kitchen pleasure will be driven out.

USE IT 30 DAYS AT THE COMPANY'S EXPENSE

LET them install a Daylight Kitchen Unit in your home today without charge. Use it for thirty days. Then, if you like it, 75c a month for 10 months pays for it. If you do not care to keep it, the company will replace the old fixture free of charge. This offer is good until March 15.

SPECIAL SERVICE TO RENTERS

IF you are renting a home now, that need not keep you from enjoying a Daylight Kitchen Unit. We will give you the same 30 days' free trial and free installation. Then if you decide to move within 10 months, we will replace the old fixture and take down your Daylight Unit. No charge for this, either. All on the same liberal terms, too.



Just tell us you want to try the Daylight—we'll do the rest.

Pacific Power & Light Company

Always at Your Service

Advertisements similar to the above were run in local newspapers.

Results

A canvass was made of the 26,000 residential customers on the company's property and in most districts was quite thorough in its nature. Difficulty was encountered, however, in reaching the many rural customers which this company serves. One thousand nine hundred and eighty-five units were actually installed, which was equivalent to approximately 8 per cent of the number of residential meters. After the trial period, which was fixed at thirty days, 302 of the units installed were ordered out by customers. This is approximately 15 per cent of the number of units installed, the rest, amounting

INFORMATION REQUESTED

Installed

Check

Kitchen Unit Lamp Removed.....Watts
Switch Lamp InstalledWatts
Outlet.....

Contractor

The reverse side of the installation card filled out by the contractor.

Direct Campaign Expenses

The following is an analysis of the various items of selling costs incurred during the campaign:

Newspaper advertising (preparation, space and agency commission, 34 newspapers used)	\$ 1,658.97
Cost of broadsides.....	472.14
Printing of installation cards.....	18.50
Carrying cases for salesmen.....	104.00
Lamps supplied with units.....	749.34
Commissions paid to salesmen.....	1,724.25
Prizes to salesmen.....	100.00
Cost of installing units.....	1,285.00
Cost of units.....	4,426.29
Miscellaneous	200.00
Total	\$10,738.49

GROSS BUSINESS DONE

245 units sold at \$6.75 each.....	\$ 1,653.75
1,438 units sold at \$7.50 each.....	10,775.00
Total	\$12,428.75
Less total campaign costs.....	10,738.49
Net	\$ 1,690.26

Remarks

It will be noted from the above tabulation of campaign costs that such items as overhead expenses, administration and interest on deferred ac-

counts were not taken into consideration. It is not believed that the readers would be particularly interested in a further analysis of the merchandising feature of the campaign and this analysis is simply intended to show that a campaign of this kind can be considered self-supporting.

From information that had been received concerning similar campaigns which had been carried on by other companies, the company had hoped to place the kitchen unit with approximately 15 per cent of its residential customers. While the results fell far short of that mark and in reality reached only 8 per cent it was felt that the campaign had been quite successful as an opening wedge to the improvement of lighting conditions in homes and will have its effect in increasing residential lighting revenues.

Variation of Sales Percentage

The percentage of sales in districts varied from 3 per cent to as high as 20 per cent of connected homes. There seems to be no particular class of towns, as to size or conditions, responsible for the difference in percentage of sales. The difference was in all probability due to the manner in which the campaign was conducted locally, although many other circumstances may have affected the results.

As was expected, difficulties were encountered, some of which were smoothed out during the progress of the campaign. Many could have been avoided had the company been experienced in merchandising the device.

some instances the daylight blue lamp was used, but this practice was almost immediately discarded, as the effect of the light from this type of lamp was not desirable. It became quite apparent shortly after the beginning of the campaign that it would be impossible to standardize on any one size of lamp to meet the varying conditions found in kitchens. Instructions were then given that the customer could have any size lamp desired installed in the unit. Recommendations were made in each individual case for a lamp of sufficient wattage to give proper illumination in the kitchen. We believe this is the only sensible way to recommend the size of lamp to be used with the kitchen unit.

Prompt Installation Important

Another outstanding difficulty encountered was the failure to install the units promptly. Many cancellations resulted before the units were installed because of the time elapsing between the signing of the agreement card and the appearance of the contractor to install the unit. We believe it is of first importance that a company desiring to campaign on the unit make provisions that the units are installed with the utmost promptness. The most desirable manner would be to install the unit at the same time the agreement card is signed.

It is believed that the kitchen lighting campaign offers a splendid opportunity to the contractor-dealers to obtain other wiring business in the homes while installing the kitchen unit. Little, however, was accomplished in this way as less than 100 convenience outlets and wall switches were installed as a result of the campaign.

It was necessary that additional salesmen be hired temporarily to help out the regular sales force, and it is quite apparent that more cancellations resulted from sales made by the itinerant salesman than from sales closed by members of our permanent sales organization.

Kitchen Unit Campaign Profitable

As mentioned, the campaign was conducted from March 1 to April 15 and it is believed that everything considered the fall of the year would be the more appropriate time for a campaign of this kind. This would be particularly true where the lighting rates are comparatively low so that the increase in current consumption, due to the installation of the kitchen unit, coupled with the natural increase of lighting bills at that season, would not be a serious obstacle.

It is believed that any utility wishing to increase its revenue from residential lighting customers will find the kitchen unit campaign a profitable venture. There seems to be no question but that it can be carried on without cost to the utility and should be the means of promoting better lighting and increased use of electricity for lighting purposes in other rooms in the home. The kitchen unit will bring in a steady revenue which should be attractive to most utilities. Undoubtedly those companies operating in a more compact territory should be able to produce better results than were obtained in the campaign outlined above.

Fixture Permit and Agreement

Date.....

TO THE PACIFIC POWER & LIGHT COMPANY:

You may install in my kitchen, for thirty (30) days free trial, your Daylight Kitchen Unit complete with lamp without any obligation to buy on my part. At the end of thirty (30) days if I am not satisfied with this fixture I will notify you to remove it at your expense.

If I am satisfied and wish to keep it I will pay you seventy-five (75c) cents a month until I have paid seven (\$7.50) dollars and fifty cents; these monthly payments to be put on my light bill.

Signed

Address

Town

Accepted

Pacific Power & Light Company

Per.....

Representative.

The reverse side of the fixture permit-and-agreement card.

It was found difficult to keep the sales people working on the unit throughout the period of the campaign. This was due to the fact that it was a small device sold for comparatively little and that meant that many people had to be solicited each day if the salesman was to bring his earnings up to a satisfactory amount. There was a decided tendency for the salesman to favor the selling of larger appliances on which the single commission was greater than on the kitchen unit. The problem of handling this was difficult because of the scattered territory served by the company. This matter could perhaps be easily taken care of if the property were compact enough to allow of daily sales meetings with the salesmen.

It was decided prior to the campaign that 150-watt clear lamps would be used with the unit. In

Magnetic Protection and Separation

By E. A. Wilcox

Pacific Coast Representative Dings Magnetic Separator Company

SOME phases of the application of the principles of magnetism have been frequently overshadowed by the more spectacular and newer developments in electrical science. The quite well known but less understood possibilities and very practical applications of the subtle power of magnetism have been quite often overlooked. The engineer has been prone to think of magnetism simply

as it is applied to the production and utilization of power in generators and motors, to the operation of relays and switches, or to the more simple use of magnets of the so-called "lifting type."

To create an interest in the subject it is only necessary to call attention to the fact that there are at least ten thousand industries in the United States that are already benefitting by the use of magnetism in ways other than those enumerated in the preceding paragraph and to venture the assertion that at least twenty-five times that number would derive real benefit and profit from similar applications.

The matter is one that is of interest to the manufacturer and the user of magnetic equipment and to the central station which must supply the power necessary to actuate apparatus of this character. The load developed is a profitable one as it is generally an addition to existing installations. The connected load is relatively small in comparison with some other industrial applications (usually varying from $\frac{1}{2}$ to 10 kw.). A single plant, however, may make use of several magnetic machines. The power factor and load factor are relatively high, while the load is non-fluctuating in character and in most instances requires eight to twenty-four-hour service. Furthermore no expensive advertising or sales campaign is required to build up the load. A well informed power engineer can usually interest a customer by simply bringing the matter to his attention at the same time advice is rendered concerning motor or other electric installations.

Direct current is required to actuate electromagnetic separator devices. The supply of energy is usually taken from some source already available, from d.c. generators belted to line shafts or from suitable motor generator sets installed specially for the purpose. Obviously therefore the load is usually that of an alternating current motor under more or less continuous operation at full load.

The central station, alert for new and profitable uses of electricity and the power salesman anxious

TO give the men in the electrical industry in the eleven Western states a more thorough understanding of the functions of the electromagnetic separator, Mr. Wilcox has prepared this article dealing with the four general classifications of magnetic separators. The author of the article believes that a load of considerable magnitude may be developed by central stations if due attention is given to this class of industrial equipment.

to render real service to his customers, cannot afford to overlook the possibilities of magnetic separator loads. So far the manufacturers have been largely responsible for promoting the use of magnetic separators. An accurate survey of existing installations on any large power system, however, will reveal the fact that some tangible results have been obtained and that the central stations are benefitting

regularly on account of revenue from this source.

In view, therefore, of the pioneer promotion work having been done, the possibilities having been proved, and the value of the load having been recognized, the central station is now afforded the opportunity of profiting in greater measure from the effort already put forth by actively cooperating with the manufacturers. Furthermore the manufacturers of magnetic separator equipment have earned and are entitled to the active support of the power companies.

The power salesmen can do a great deal to assist the manufacturer by simply calling the customer's attention to the need for this class of equipment at the proper time. To be able to advise the customer intelligently, however, he must know something of the functions of magnetic separators. He should have a general knowledge of the types of equipment available and he should also know how they may be applied to the best advantage in different industrial enterprises. The subject is one that is quite easily comprehended and an understanding of the following will enable a power salesman to assist the manufacturers and to render real service to his company and to his customers.

Functions of Magnetic Separators

Although magnetic separators have many diverse applications they are usually put to use for one of four different purposes:

- (1) Removing tramp iron from material to be crushed or ground, to prevent damage to machinery, or explosions and fires resulting from sparks in combustible products. (Examples—rock crushing plants and coal pulverizing plants).
- (2) Removing iron particles from material where it acts as an impurity. (Examples—glass plants, brass foundries and ceramic industries.)
- (3) Reclaiming iron from waste or other classes of material for further use. (Examples—iron and steel foundries and refuse reclaiming plants).
- (4) Separation of magnetic substances from non-magnetic materials. (Examples—iron, zinc, manganese and tungsten mines).

At best, permanent magnets have but a small percentage of the attractive force of electromagnets

and this strength weakens with age. They consist of high carbon steels (usually about 65 points) which have been permanently magnetized and the force they exert is due to the so-called residual magnetism which they retain in relatively small proportion. Electromagnets on the other hand consist of iron or soft steel cores wound with wire. Passage of current through the wire creates a strong magnetic field within the core and results in its having great attraction for magnetic materials. The strength of the attraction is in proportion to the number of turns of wire and to the amperes flowing through the wire. The magnet cores lose practically all their magnetism whenever the current is interrupted.

Permanent magnets are little used in magnetic separation and in view of their obvious shortcomings are not referred to elsewhere. Electromagnetic separators, however, when properly designed and applied are most efficient and the discussion covers their use.

Types of Magnetic Separators

Magnetic separators of various types, each intended for some specific purpose, have been designed during the past twenty-five years or since the possibilities of use have become more generally understood. Each type is now constructed in a variety of sizes to meet the individual user's requirements. Although each design involves the same principle of magnetic attraction the types of equipment are many and quite dissimilar in application as well as in appearance. As a rule, however, they all come under one or more of the following classifications:

- (1) Moving magnet separator.
 - (a) Magnetic pulley.
- (2) Stationary magnet separators.
 - (a) Suspension magnet.
 - (b) Magnetic troughs or chutes.
- (3) Induced magnet separators.
 - (a) Disk type.
 - (b) Drum type.
 - (c) Stationary type.
- (4) Belt type magnet separators.
 - (a) Belt type with series of stationary magnets.
 - (b) Cross belt type.

Magnetic Pulleys

The magnetic pulley is one of the simplest and yet the most widely used types of separator. It is usually installed as the head drive pulley in place of the ordinary cast iron pulley of a belt conveyor. The surface of the pulley is magnetized so that magnetic material passing along the belt is not permitted to fall by gravity in the usual manner but is held tightly against the belt until the belt leaves the pulley. The result is that the non-magnetic material falls at one point and the magnetic material at another, thus effecting the desired separation.

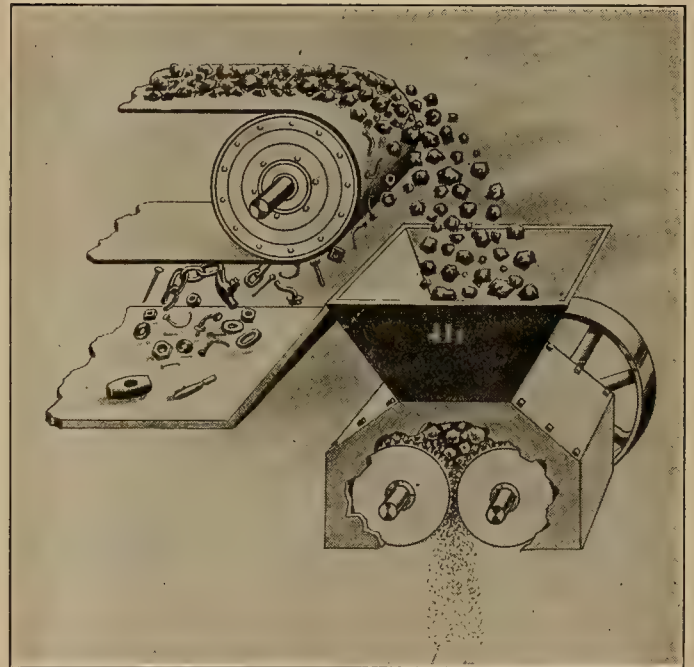
The construction of the pulley is likewise very simple. It consists essentially of a solid iron core made in close fitting sections, mounted on a shaft. The iron core is deeply grooved and coils of wire are wound in these grooves. The iron between the coils acts as alternate magnetic poles. The coils are impregnated, covered with heavy bronze shields, connected in series and the terminals brought through the center of the shaft to collector rings at one end. The pulley is supplied with energy from a d.c. cur-

rent supply through brushes in contact with these collector rings.

In laying out a pulley installation, it is essential to remember that the strength of a pulley increases with its diameter. This is due to the fact that magnetism varies with the number of turns of wire and with the amperes of current imposed. The larger the pulley diameter the greater is the number of turns of wire with which it can be wound and yet maintain the proper relationship between the copper and iron in its design. It is evident, therefore, that the greater the depth of burden on the belt the greater should be the diameter of the pulley. Likewise, a larger pulley should be used when the belt speed is to be high.

Suspension Type Magnets

Magnets of this sort may be of the so-called mushroom type or of the bi-polar type. The former consists of a horizontal coil imbedded in an iron or soft steel core and on account of its compact design



Magnetic pulley protecting crusher.

and localized flux distribution generally is employed as a lifting magnet for handling scrap iron and other iron and steel products.

The bi-polar type, however, is of a less compact design. The poles are more widely separated and consequently its magnetic flux is spread over a wider range. Its attraction is greater at a distance from the poles than is the mushroom magnet and consequently it is better adapted for installation above a conveyor from which iron is to be extracted.

The suspension type magnet has the disadvantage that the current must be cut off and the accumulated iron removed from the poles periodically by hand. Furthermore, in case of an accidental power interruption the magnet drops its load with what sometimes proves to be disastrous results.

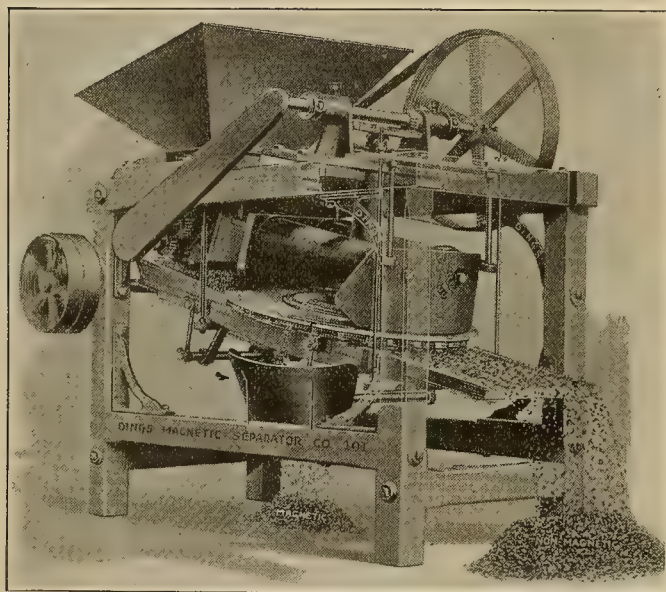
Under normal conditions a magnetic pulley is to be preferred to a suspension type magnet. On the

other hand, where the depth of burden is great or the conveyor speed is high it is sometimes advisable to use a suspension type magnet in addition to a magnetic pulley. By using such a combination the suspension magnet will pick up pieces of iron resting on the surface of the burden and the pulley will remove the iron which has settled to the bottom of the burden.

Magnetic Troughs

This type of stationary magnet is one in which a portion of an inclined trough or chute through which material passes is magnetized with pole pieces actuated from a magnet coil adjacent thereto. It may be of a form that must be cleared of accumulated scrap periodically by hand or it may be equipped with an automatic take-off which passes back and forth across the chute, removes the iron as it collects and discharges it at either side.

Material may be charged into the chute by hand, from a bucket conveyor, or through a distributing



Disk type magnetic separator removing iron from brass borings.

hopper. This type of separator is manufactured in a number of sizes and designs and is widely used in removing tramp iron from grain, feed and miscellaneous manufactured products.

Disk Type Separator

In its simplest form the disk type machine consists of a series of soft steel pole pieces mounted on a circular disk adjacent to the two poles of a stationary electromagnet. Magnetic material passed beneath the rotating disk is attracted to the moving pole pieces while they are adjacent to the stationary pole pieces. The magnetic material is released as soon as the moving poles move from under the stationary poles. In other words, the moving poles pick up magnetic material when over the conveyor and drop it at either side, the diameter of the disk being somewhat greater than the width of the conveyor.

This principle is carried out in a machine having an inclined shaker conveyor with one or more revolving disks placed above it, as well as in a belt

conveyor with the disks above. In the latter design the stationary magnets are sometimes placed below the belt. Separators involving this principle are extensively used for removing iron from brass borings and turnings. Certain types are likewise employed in concentrating ores and for various industrial purposes.

Drum Type Separators

Drum type separators are of two distinct types: first, those having a series of magnets mounted stationary and adjacent to a certain portion of the outside of a revolving drum or cylinder and, second, those having a stationary magnet mounted in a similar manner within a revolving drum. In the type first mentioned, a series of magnets mounted on a cast iron frame is usually arranged at the lower end of an inclined revolving screen in such a manner that material containing iron is drawn to the side of the screen by the induced magnetism and lifted up as it revolves and is released at the proper time (i.e., when it passes beyond the magnet) where it falls into a chute and is thus separated from the non-magnetic material.

In the second type, magnetic material passing over a drum revolving in the same direction is held against the surface until it is separated from the non-magnetic material when it is likewise released. Separators of the first mentioned type have been widely applied to iron and steel foundry use where they are employed to reclaim iron which was formerly consigned to the dump. This type is also rapidly coming into use where screening operations are conducted.

Stationary Induced Magnet Separators

This is a wet type separator used extensively in the ceramic and other industries for removing particles of iron from clay slip and from other liquid or semi-liquid materials. It consists of a number of electromagnets enclosed in a water-tight casing and installed in a trough. A removable brass tray having numerous soft steel pole pieces fitted in the bottom sets in the trough in such a way that the pole pieces come directly over the electromagnets and are energized by the induced magnetism.

The trough is placed in an inclined position in such a way that particles of iron or other magnetic material passing through the separator cling to the magnetized poles until the flow is discontinued and the power circuit is opened. The tray may then be removed and the magnetic materials washed off.

Belt Type Separators

This type of separator consists of one or more stationary magnets across the poles of which a conveyor belt is passed. The belt is made to travel in a direction parallel to the lines of force (except in the cross belt type described below). Magnetic material clings to the belt as it passes from one pole to another and is released from the belt only when the last magnetic pole is passed.

There are several types of separators of this character. In one design, material to be separated is charged near the top of a steeply inclined conveyor. Gravity carries the non-magnetic material down-

ward whereas magnetic particles cling to the belt and are carried upwards and discharged into a chute at the top. This type may be used either for wet or dry separation. If the former, a stream of water may be directed against the belt and thus tend to wash the non-magnetic particles downward and to make a cleaner separation.

Another type consists of a horizontal belt type separator mounted above a simple belt conveyor in such a way that magnetic material is drawn upwards against the belt which passes across the series of poles and is finally released at a point beyond where the lower belt discharges its burden. Separators operating on this principle are used in a variety of industries. The wet type is used extensively in iron mining operations involving ore concentration.

Cross Belt Separators

The cross belt separator is quite different from the plain belt type. It usually consists of two bipolar electromagnets, one above the other, with a conveyor belt passing between the poles parallel to the lines of force of the magnetic circuit. The poles of the upper magnet are wedge-shaped and the lower ones flat. Magnetic material passing along the main belt is attracted to the upper wedge-shaped poles. However, two cross belts or take-off belts are interposed between the main belt and each upper pole. They travel at right angles to the main belt. Material attracted towards the upper poles is therefore intercepted, carried to one side and dropped into receptacles.

This type of separator may be made very powerful. It is generally used for separating weakly magnetic ores. It may be constructed with one, two or three sets of magnets mounted along one main belt, in which case each set of magnets may be designed with varying intensities.

A type of separator operating on a similar principle is of the wet type and is used for treating wet, finely ground, ores or other materials.

Magnetic Separator Applications

Each type of separator was originally designed for some one particular application. Eventually each type has been found to have a variety of applications. Likewise several types of machines often can be used with varying success for any single application. In gravel plants, for instance, it is possible to use a magnetic pulley, a suspension type magnet, a magnetic chute, a drum type magnet or even a belt type magnet to secure protection against damage from tramp iron. Usually, however, but one type is best suited for an individual plant.

The average purchaser is seldom qualified by experience to judge of the relative merits of the different types. He must have engineering advice and the engineer must not only know the relative advantages of the different designs of separators but he must analyze the customer's conditions before he can make intelligent recommendations. Unfortunately, many engineers have given the subject too little thought and frequently make serious and costly mistakes. A common horseshoe magnet or possibly a magnetic pulley are the only pieces of magnetic

equipment given consideration in many plants. Fortunately the latter has a wide variety of applications where it may perform efficiently. The former, however, is generally useless, if not a real detriment, because too much dependence is ordinarily placed on it.

Use of Magnetic Separators

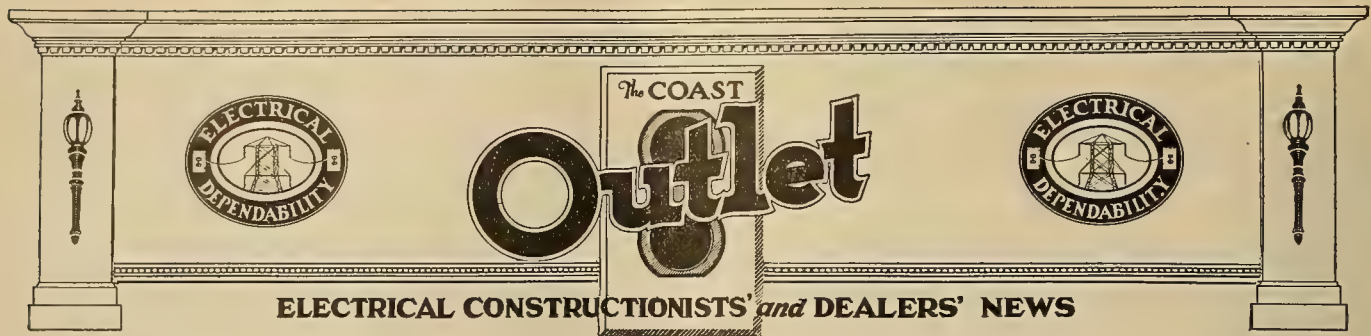
The most extensive use of magnetic separators is in the removal of tramp iron from conveyed material. Bolts, nuts, mule shoes, drill points and other foreign pieces of iron or steel entering crushing or grinding machinery may cause breakdowns. In certain industries sparks resulting from tramp iron may cause fires or explosions. By removing the cause of these troubles the magnetic separator insures the industrial plant against heavy losses. A few of the industries benefitted are coal pulverizing plants, rock, ore or slag crushing plants, cement mills, salt works, glass plants, abrasive plants, fertilizer plants, vegetable oil plants, flour and feed mills, sugar refineries, paper mills, rubber plants, lumber mills and various chemical plants. It is safe to venture that many millions of dollars are being saved annually in these industries by the practical application of magnetic protection.

Particles of iron or steel in many products are injurious. In glass, batch iron has a tendency to make the product greenish in color. Bits of iron in non-ferrous metal scrap, such as borings and turnings, must be removed before melting, or inferior castings will result. Particles of iron in salt destroy its appearance and sales value. Pieces of iron in cereals and other food products are harmful. Blue specks and minute blisters in ceramic ware are the result of iron in the clays. Presence of small nails, tacks and pieces of wire in feed results annually in the death of thousands of animals. Minute particles of iron in many chemical plant products are highly injurious.

The proper type of magnetic separator installed in each of these industries will completely remove the iron impurities.

Iron and steel which is ordinarily wasted may be reclaimed with suitable separator equipment. There is a tremendous loss in the majority of gray iron, steel and malleable foundries. Much metal which could easily be reclaimed is sent to the dump. Cupola slags contain large quantities of iron which could be reclaimed and remelted. Floor sands also contain a large percentage of iron. It has been found very profitable to remove iron from blast furnace slugs. Garbage reclaiming plants are quite dependent upon magnetic separation for profitable operation.

This process consists in the separation of magnetic materials from associated gangue or in separating strongly magnetic materials from those of lesser magnetic susceptibility. The processes are employed widely in mining operations. Some of the largest iron and zinc mines in the country are dependent on the use of magnetic separators. The various processes are more complicated than those heretofore described and usually a laboratory test is essential before recommendations can be made.



Electrical Construction

By E. Earle Browne

A great deal of space has been given in the past to discussion of proper estimating of the conduit job, but the class of work which has formed over 50 per cent of the building construction for the past four years, namely, the residence, has been almost entirely ignored. This class of construction in most communities is done by the concealed knob-and-bushing system and is in the main figured by men who are so busy trying to make both ends meet that a close study by them of the elements of labor and material going to make up a job is next to impossible. Their bid, therefore, is largely governed by their competitor's price and the natural consequences are that this class of work continues to go lower and lower in price with the result that the mortality of the men in this class of business is appalling. Devising a scheme of unit prices for this class of construction seems to be the simplest as well as most practical, but unless these prices are accurate they also are of doubtful value. The method which is based on the number of outlets regardless of kind, while simple, is also very inaccurate. Local rules also make considerable difference, particularly as to wattage limitations per circuit as well as minimum wattage per outlet, as these affect materially the service and meter board work and with the ever increasing use of the electric range, water heater, air heater, etc., it is absolutely necessary to sub-

divide the various classes of outlets and also to provide for such services and distribution as are met in most cases. Average conditions in relation to length of service, circuit runs, distance between out-

CONDUIT SERVICE

(3)—No. 10 Wires

30-a. 125-v. 3-pole safety switch (1) @	\$ 4.30 ea.	\$ 4.30
25-a. 125-v. plug fuses (2) @	.07 ea.	.14
¾" conduit (galv.), 20 ft. @	17.10 C.	3.42
¾" pipe straps (5) @	1.00 C.	.05
¾" E—3-wire conduit (1) @	.99 ea.	.99
¾" locknuts (2) @	1.45 C.	.03
¾" bushings (1) @	3.35 C.	.03
No. A 2 Federal bushings (4) @	10.80 C.	.43
*No. 10 S.B. solid R.C. wire, 70 ft. @	26.35 C.	1.84
Grounding materials		1.76
Labor (4½ hr.) @	1.50 hr.	6.75

Total, \$19.74

*This allows a total of 25 amps. × 230 volts = 5,750 watts.

CONDUIT SERVICE

(2)—No. 8 Wires

60-a. 250-v. 2-pole safety switch (1) @	\$10.15 ea.	\$10.15
35-a. 250-v. cart. fuses (2) @	21.00 C.	.42
¾" conduit (galv.) 20 ft. @	17.10 C.	3.42
¾" pipe straps (5) @	1.00 C.	.05
¾" E—2-wire conduit (1) @	.99 ea.	.99
¾" locknuts (2) @	1.45 C.	.03
¾" bushings (1) @	3.35 C.	.03
No. A3 Federal bushings (3) @	12.60 C.	.38
*No. 8 S.B. solid R.C. wire, 75 ft. @	36.40 M.	1.64
Grounding materials		1.76
Labor (4½ hr.) @	1.50 hr.	6.75

Total, \$25.62

*This allows a total of 35 amps. × 115 volts = 4,025 watts.

CONDUIT SERVICE

(3)—No. 8 Wires

60-a. 250-v. 3-pole safety switch (1) @	\$10.50 ea.	\$10.50
35-a. 250-v. cart. fuses (2) @	21.00 C.	.42
¾" conduit (galv.) (20 ft.) @	17.00 C.	3.42
¾" pipe straps (5) @	1.00 C.	.05
¾" E—3-wire conduit (1) @	.99 ea.	.99
¾" locknuts (2) @	1.45 C.	.03
¾" bushings (1) @	3.35 C.	.03
No. A 3 Federal bushings (4) @	12.60 C.	.50
*No. 8 S.B. solid R.C. wire, 70 ft. @	36.40 M.	2.55
Grounding materials		1.76
Labor (5 hr.) @	1.50 hr.	7.50

Total, \$27.75

†Rule No. 503m, page 29, of the 1923 Code allows 3—No. 8 single conductor single braid solid wires in a ¾-in. conduit.

*This allows a total of 35 amps. × 230 volts = 8,050 watts.

CONDUIT SERVICE

(2)—No. 10 Wires

30-a. 125-v. 2-pole safety switch (1) @	\$ 2.50 ea.	\$ 2.50
25-a. 125-v. plug fuses (2) @	.07 ea.	.14
¾" conduit (galv.) 20 ft. @	17.10 C.	3.42
¾" pipe straps (5) @	1.00 C.	.05
¾" E—V wire conduit (1) @	.99 ea.	.99
¾" locknuts (2) @	1.45 C.	.03
¾" bushings (1) @	3.35 C.	.03
No. A Federal bushings (3) @	10.80 C.	.32
*No. 10 S.B. solid R.C. wire (45 ft.) @	26.35 M.	1.19
Service conduit ground wire No. 8 R.C. 20 ft. @	36.40 M.	.73
Neutral conductor ground wire No. 10 bare, 20 ft. @	15.70 M.	.31
Ground clamps (3) @	24.00 C.	.72
Labor (4 hr.) @	1.50 hr.	6.00

Total, \$16.43

*Under rule (No. 404a) of the 1923 Code Service Conductors must not be smaller than No. 10. This allows a total of 25 amps. × 115 volts = 2,875 watts.

lets, etc., are at least better under this scheme than merely estimating a selling price on a flat sum per outlet basis. The following subdivision of a job is a step in the right direction and while, of course, like all things subject to personal opinion and alteration, it is at least a basis to work from.

CUTOUTS

Cabinet	\$0.70
1 cutout No. 1,935 @ 36c. ea. ....	.36
2 fuses, plug, @ 7c. ea. ....	.14
3 Federal bushings .....	.32
Labor, ½ hr. @ \$1.50 hr. ....	.75

Total, \$2.27

LIGHT CIRCUITS

50 ft. No. 14 S.B. solid R.C. wire @	\$14.35 M.	\$0.72
5 v. 7/32" loom @	4.95 C.	.25
2—¼" loom clamps @	2.10 C.	.04
12 No. 5½ Nail It knobs @	2.80 C.	.34
15 5/16" x 3" bushings @ .....	.90 C.	.13
Labor, ¾ hr. @	1.50 hr.	1.13

Total, \$2.61

CONVENIENCE AND HEATER CIRCUITS

70 ft. No. 12 S.B. solid R.C. wire @	\$19.60 M.	\$1.37
6 ft. 7/32" loom @	4.95 C.	.30
2—¼" loom clamps @	2.10 C.	.04
15 No. 5½ Nail It knobs @	2.80 C.	.42
18—5/16" x 3" bushings @ .....	.90 C.	.16
Labor, 1¼ hr. @	1.50 hr.	1.88

Total, \$4.17

20-AMP. PORTABLE HEATER OUTLET

No. 12 S.B. solid R.C. wire, 30 ft.	\$0.58
7/32" loom, 3 ft. ....	.15
¼" loom clamps (2) .....	.04
No. 5—½ Nail It knobs (8) .....	.22
5/16" x 3" bushings (10) .....	.09
5/16" x 4" bushings (2) .....	.02
1 gang switch box (1) .....	.20
20-amp. receptacle (1)	1.39
O. B. plate (1) .....	.30
Incidentals and inspection .....	.55
Labor, 1½ hr. @ \$1.50 hr.	2.25

Total, \$5.79

BRACKET OUTLET

No. 14 S.B. solid R.C. wire, 30 ft. @.....	\$14.35 M.	\$0.43
2/32" loom, 3 ft. @.....	4.95 C.	.15
¼" loom clamps (2) @.....	2.10 C.	.04
No. 5—½ Nail It knobs (8) @.....	2.80 C.	.22
5/16" x 3" bushings (8) @.....	.90 C.	.07
5/16" x 4" bushings (4) @.....	1.13 C.	.05
No. 24,151 outlet box (1) .....		.16
½" fixture stud (1) .....		.10
"Handy" box support (1).....		.15
Inspection and incidentals .....		.35
Labor, 1 hr. @.....	1.50 hr.	1.50

Total, \$3.22

SINGLE CONVENIENCE OUTLET

No. 12 S.B. solid R.C. wire, 30 ft.	\$0.59
7/32" loom, 5 ft. ....	.25
¼" loom clamps (2) .....	.04
No. 5—½ Nail It knobs (8) .....	.22
5/16" x 3" bushings (10) .....	.09
5/16" x 4" bushings (2) .....	.02
1 gang switch box support (1) .....	.15
1 gang switch box support (1) .....	.20
Single convenience outlet (shallow) (1) .....	.23
Single convenience plate (1) .....	.16
Incidentals and inspection .....	.35
Labor, 1½ hr. @ 1.50 hr.	2.25

Total, \$4.55

DUPLEX CONVENIENCE OUTLET

No. 12 S.B. solid R.C. wire, 30 ft.	\$0.59
7/32" loom, 5 ft. ....	.25
¼" loom clamps (2) .....	.04
No. 5—½ Nail It knobs (8) .....	.22
5/16" x 4" bushings (2) .....	.02
5/16" x 3" bushings (10) .....	.09
1 gang switch box support (1) .....	.15
1 gang switch box support (1) .....	.20
Duplex convenience outlet (shallow) (1) .....	.28
Duplex convenience plate (1) .....	.16
Incidentals and inspection .....	.35
Labor, 1½ hr.	2.25

Total, \$4.60

SINGLE POLE FLUSH SWITCH

No. 14 S.B. solid R.C. wire, 30 ft.	\$0.43
2/32" loom, 3 ft. ....	.15
¼" loom clamps (2) .....	.04
No. 5—½ Nail It knobs (8) .....	.22
5/16" x 3" bushings (8) .....	.07
5/16" x 4" bushings (4) .....	.05
1 gang switch box (1) @ 20c. ea. ....	.20
S.P. tumbler switch (1) @ 38c. ea. ....	.38
1 gang O.B. plate (1) @ 23c. ea. ....	.23
Box support (1) @ 15c. ea. ....	.15
Inspection and incidentals .....	.35
Labor, 1¼ hr. @ \$1.50 hr.	1.88

Total, \$4.15

THREE-WAY FLUSH SWITCH

No. 14 S.B. solid R.C. wire, 40 ft.	\$0.57
7/32" loom, 5 ft. ....	.25
¼" loom clamps (3) .....	.06
No. 5—½ Nail It knobs (12) .....	.34
5/16" x 3" bushings (12) .....	.11
5/16" x 4" bushings (6) .....	.07
1 gang switch box (1) .....	.20
1 gang switch plate O.B. (1) .....	.23
1 gang switch box support (1) .....	.15
3-way tumbler switch (1) .....	.54
Inspection and incidentals .....	.35
Labor, 1¾ hr. @ \$1.50 hr.	2.63

Total, \$5.50

FOUR-WAY FLUSH SWITCH

No. 14 S.B. solid R.C. wire, 50 ft.	\$0.72
7/32" loom, 5 ft. ....	.25
¼" loom clamps (4) .....	.08
No. 5—½ Nail It knobs (12) .....	.34
5/16" x 3" bushings (12) .....	.11
5/16" x 4" bushings (8) .....	.09
1 gang switch box (1) .....	.20
1 gang switch plate (1) .....	.23
1 gang switch box support (1) .....	.15
4-way switch (1)	3.33
Inspection and incidentals .....	.35
Labor, 2 hr.	3.00

Total, \$8.85

BELL AND PUSH BUTTON

2½" I. B. bell (1) @	\$0.90 ea.	\$0.90
Anti-wood push button (1) @ .....	.30 ea.	.30
No. 18 bell wire, 40 ft. @ .....	.63 C.	.25
Labor (½ hr.) @	1.50 hr.	.75

Total, \$2.20

CEILING OUTLET

No. 14 S.B. solid R.C. wire, 30 ft. @	\$14.35 M.	\$0.43
7/32" loom, 3 ft. @	4.95 C.	.15
¼" loom clamps (2) @	2.10 C.	.04
No. 5—½ Nail It knobs (7) @	2.80 C.	.20
5/16" x 3" bushings (8) @ .....	.90 C.	.07
No. 24,151 outlet box (1) @	15.60 C.	.16
½" fixture stud and bolts (1) @ .....	.10 ea.	.10
Handy box support (1) @ .....	.15 ea.	.15
Inspection and incidentals .....	.35	
Labor, ¾ hr. @	1.50 hr.	1.13

Total, \$2.78

FLOOR BOX RECEPTACLE

No. 12 S.B. solid R.C. wire, 30 ft.....	\$0.58
7/32" loom, 3 ft. ....	.15
¼" loom clamps (2) .....	.04
No. 5—½ Nail It knobs (8).....	.22
5/16" x 3" bushings (8) .....	.07
1 gang switch box (1) .....	.20
Single convenience outlet (1) .....	.23
Solid plate (bevel removed) (1).....	1.00
Incidentals and inspection .....	.35
Labor, 2 hr.	3.00
Total,	\$5.84

BELL RINGING TRANSFORMER

Transformer (1) @.....	\$2.10 ea.	\$2.10
No. 18 bell wire (40 ft.) @.....	.63 C.	.25
Labor (½ hr.) @.....	1.50 hr.	.75
Total,		\$3.10

With units such as the above at hand it is a matter of but a few minutes to price up an estimate after counting the various outlets from the plan and noting anything special in the specifications.

A Practical System of Accounting for Contractor and Dealer

By F. V. Mitchell

THE writer wishes at this point to review the more salient features of the accounting system set forth in this series, beginning with the April 1, 1924, issue of the Journal of Electricity, and by so doing to assist the contractor-dealer in the practical application of the methods that have been presented. The intention has been to illustrate and explain the operation of the most simplified accounting forms necessary to enable the preparation of an accurate statement of the business from the books. The dealer who is able to furnish such a statement upon request is always prepared for any emergencies that may arise, either in the operation of the business or for credit purposes.

The first portion of the series was devoted to the needs of the smaller electrical store and an attempt was made to embody sufficient detailed illustration and explanation to permit of the practical application of the system. The smallest store will usually be found to be equipped with the proper sales tags, material requisitions, etc., generally in use for recording the itemization of transactions at the time they occur, so that the only acquirements necessary would be the Combined Cash Book-Journal as illustrated in the April 15 issue of the Journal of Electricity and the standard form of Double Entry Ledger as illustrated in the May 1 issue to put into effect the system as outlined. If, previously, there has been no General Ledger kept by the business and, consequently, no accounts from which to transfer balances, it will be essential to compile the following inventories to open the set of books: Merchandise, Automobiles, Furniture and Fixtures, and Tools and Equipment. The Merchandise inventory should include the value of material on Jobs in Process unbilled.

It will also be necessary to ascertain the amount of Labor in Process, Cash in Bank, Accounts Receivable, Notes Receivable, Accounts Payable and Notes Payable. If, for instance, the books are opened as of the first of the calendar year after the usual annual inventory is taken, the amounts referred to

above would be entered in the respective accounts outlined in the Chart of Accounts, in the April 1 issue, as the Balance at that date. The amounts of Accounts Payable and Notes Payable would be entered on the credit side, appearing as Credit Balances and the other amounts entered on the debit side of the various accounts, appearing as Debit Balances. The difference between the totals of the debit and credit balances as entered represents the net worth of the business at that date and this amount should be entered as the Balance on the credit side of the Capital Account, which entry balances out the Debit and Credit sides of the General Ledger at point of opening. After the books are opened in accordance with the above explanation, no difficulty should be experienced in their successful operation and yearly closing as all points in this connection have been clearly outlined in the original presentation.

The next phase taken up in order was the departmental segregation of the accounts for the larger store, constituting in reality merely an expansion of the original system to afford a more detailed analysis of the business. The real intention of that particular portion of the work was to take care of the needs of the store increasing its volume gradually, and finally realizing the necessity of the proper departmental analysis to insure the successful operation of the business. It contained a clear exposition of the proper method of departmental segregation of overhead expenses, sales and costs, and it is quite a simple matter for a store to expand any ordinary set of books being kept to include these features. It was also pointed out that, although the costs of all jobs were detailed under this method, there could be no actual proof of the correctness of the work without a Work in Process account, neither could the exact amount of overhead applicable to each particular job be ascertained.

This plan also contained the commonly established custom of entering the roughing-in charge at the time that part of the job is finished, together with the costs on the job up to that point. The

charge for the finish and the balance of the cost is entered at the time the job is entirely completed. Under this method the Profit and Loss Statement does not at any time show the true percentage of gross profit actually made on jobs, as the accounts at all times contain some entries of roughing-in charges on jobs for which no entries have been made for the finish. It can be readily seen how this will affect the total percentage of gross profit as the largest portion of the cost of the entire job has been expended upon the completion of the roughing-in work, for which only 75 per cent of the total contract price is billed. This leads up to the final solution of that phase of the problem through the use of the more scientific and accurate method, the presentation of which was begun in the July 15 issue and completed in the Oct. 15 issue. The Chart of Accounts was readjusted to include Work in Process, Unfinished Contracts, Accrued Payroll, and Cost of Goods Sold—Overhead. Under this arrangement, the total amounts of all contracts are entered on the books at the time the jobs are obtained, the total selling price of all jobs held in Unfinished Contracts Account and the total cost in Work in Process Account until final completion of the work. At that time the total selling price and cost are automatically transferred into

Sales and Cost of Goods Sold Accounts, respectively, the Profit and Loss Statement shows the true percentage of Gross Profit on entirely finished jobs.

The examples presented to illustrate this method were picked at random and with the detailed explanation accompanying, these features could be incorporated into any accounting system in use by the larger store. However, it being considered a matter of such importance to the industry, an attempt will be made to present a complete set worked out in chronological order from this point.

New Los Angeles Electrical Ordinance Will Regulate Contractors

Los Angeles, Calif., is among the cities that have recently passed ordinances looking to the betterment of wiring installation conditions and to improvement in the class of work done by contractor-dealers. A new ordinance requiring that all electrical contractors be registered, that a bond be posted with the city for the faithful performance of all work, and providing stringent penalties for failure to comply with the ordinance has recently been passed and became effective on July 28. The ordinance in full is as follows:

Section 1. It shall be unlawful for any person, firm or corporation to engage in the business of electrical contracting or to install, alter or repair any electrical wiring in the City of Los Angeles, unless said person, firm or corporation shall have first registered at the office of the City Electrician, in the Department of Public Works of said city, and obtained a certificate of registration as hereinafter provided.

Sec. 2. For the purpose of this ordinance, the term, "Electrical wiring" is hereby defined to mean all electric utilization equipment which operates at more than twenty-five (25) volts, or which generates, transmits, transforms or utilizes more than fifty (50) watts in all places in the City of Los Angeles over which the Department of Public Works of said city has jurisdiction.

For the purpose of this ordinance an electrical contractor shall be deemed to be one who engages in the business of electrical wiring, the installation, alteration or repair of electrical wiring or connections, fixtures or other appliances used in connection therewith.

Sec. 3. Every person, firm or corporation desiring to obtain a certificate of registration shall make application in writing to the Board of Public Works of the City of Los Angeles at the office of the City Electrician on blanks furnished for that purpose, giving the name and address of such person, firm or corporation. If a firm, the names of the members thereof, and if a corporation, the names of the officers of such corporation, together with such other information as may be required by said Board of Public Works. Such application shall be verified on oath. If a corporation, by an officer thereof; if a firm, by a member thereof or if a person, by such person or by the duly authorized agent of such person, and every such application shall be accompanied by a surety bond, executed to the City of Los Angeles. In form, said bond must be "Joint and Several," and in the sum of One Thousand (\$1,000.00) Dollars, and said bond must be conditioned that the whole or any part thereof shall be paid to any person who has suffered damage by reason of the violation of any of the provisions of this ordinance or any amendment thereto, or any of the provisions of Ordinance No. 35,899 (New Series), entitled, "An ordinance regulating the installation, arrangement, alteration, repair, use and operation of electric wiring, connections, fixtures and other electrical appliances in buildings, and other structures in the City of Los Angeles," approved January 18, 1917, or any ordinance amendatory thereto or supplementary thereof. Said bonds shall not be void upon the first recovery, but may be sued and recovered upon from time to time by any person who has suffered damages as herein referred to, in his own name until the whole penalty is exhausted. The sufficiency of the surety on any such bond shall be approved by the Board of Public Works, and every such bond shall be approved as to form

by the City Attorney of the City of Los Angeles.

Sec. 4. Every person, firm or corporation, before being entitled to be registered or to obtain a certificate of registration as in this ordinance provided, shall pay to the Board of Public Works of said city, at the office of the City Electrician, a registration fee of One Hundred (\$100.00) Dollars, provided, however, that any person, firm or corporation engaged in the business of maintaining, repairing or installing electrical wiring, connections, fixtures or other electrical appliances within its own store or stores, building or buildings, industrial plant or plants shall, at the time of filing such application, pay to the Board of Public Works at the office of the City Electrician a registration fee of Ten (\$10.00) Dollars. Said City Electrician shall prior to the issuance of the certificate of registration herein provided for, briefly examine the applicant and pass upon the qualifications and experience of said applicant. If after such examination it appears to the satisfaction of the City Electrician that the applicant has had sufficient experience and is sufficiently familiar with the provisions of Ordinance No. 35,899 (New Series) or any other ordinance of the City of Los Angeles regulating the installation of electrical wiring, or that said applicant may be registered without jeopardizing the public safety, said City Electrician shall upon the payment of said registration fee and the filing and approval of the bond as herein provided, issue to such person, firm or corporation a certificate of registration for a period of one year from the first day of the month during which such certificate of registration shall have been issued. If said Electrician for any reason refuses to issue said certificate of registration said applicant may within ten days from date of such refusal by the City Electrician appeal to the Board of Public Works of the City of Los Angeles from the finding of the City Electrician. The Board shall thereupon set said appeal for hearing and the determination of said Board at said hearing shall be final and conclusive.

It shall be the duty of the City Electrician to issue the certificate of registration, and every such certificate shall state the name and business address of the applicant, the date upon which said certificate expires, and shall certify that the person, firm or corporation named in such certificate has complied with the provisions of this ordinance and is entitled to conduct and engage in the business of electrical contracting, for the period specified in such certificate.

Every certificate issued, as in this section provided, shall become null and void upon a second conviction of the person, firm or corporation named in such certificate, for violating any of the provisions of this ordinance or any of the provisions of Ordinance No. 35,899 (New Series) or any ordinance amendatory thereto or supplementary thereof, and thereafter it shall be unlawful for any person, firm or corporation to engage in or carry on the business of elec-

trical contracting or to represent himself as an electrical contractor, until such person, firm or corporation shall have re-registered and obtained a new certificate of registration, as hereinbefore provided.

Sec. 5. All certificates of registration issued as in this ordinance provided shall be countersigned by the City Clerk and City Auditor of said city, in the same manner as licenses.

Sec. 6. All fees collected under the provisions of this ordinance shall be deposited by the City Electrician with the City Treasurer of said city, upon the next following business day, to the credit of Departmental Receipts.

Sec. 7. Every person, firm or corporation violating any of the provisions of this ordinance shall be deemed guilty of a misdemeanor, and, upon conviction thereof, shall be punishable by a fine of not more than Five Hundred (\$500.00) Dollars, or by imprisonment in the city jail for a period of not more than six (6) months, or by both such fine and imprisonment. Each such person, firm or corporation shall be deemed guilty of a separate offense for every day during any portion of which any violation of any provision of this ordinance is committed, continued or permitted by such person, firm or corporation, and shall be punishable therefor as herein provided.

Sec. 8. That Ordinance No. 38,155 (New Series), entitled, "An ordinance regulating the business of electric wiring, the installation, alteration or repair of electric wiring, connections, fixtures or other electric appliances in buildings and other structures in the City of Los Angeles, providing for the registration of persons, firms or corporations engaged in such business and for the issuance of certificates of registration," approved May 3, 1918, be and the same is hereby repealed; provided, however, that any such repeal shall not affect or prevent the prosecution and punishment of any person, firm or corporation for any act done or committed in violation of said ordinance, and shall not affect any prosecution or action which may be pending in any court for the violation of any ordinance repealed by this ordinance.

Sec. 9. If any section, sub section, sentence, clause or phrase of this ordinance is for any reason held to be invalid or unconstitutional, such decision shall not affect the validity of the remaining portions of the ordinance. The Council of the City of Los Angeles hereby declares that it would have passed this ordinance by section, sub section, sentence, clause and phrase thereof, irrespective of the fact that any one or more other sections, sub sections, sentences, clauses or phrases be declared invalid or unconstitutional.

Sec. 10. The City Clerk shall certify to the passage of this ordinance and cause the same to be published once in The Los Angeles Daily Journal.

Electric Home Is Opened in Sacramento, Calif.

Permanent Exhibit Made Possible Through the Cooperation of Members of the Electrical Industry.

Through the cooperation of the members of the electrical industry, working on a non-partisan basis, the Electrical Contractors' and Dealers' Association of Sacramento, Calif., recently opened a permanent electric home within the Building Material Exhibit at 910 Ninth Street. The contractor-dealers were encouraged and assisted in their project by the California Electrical Cooperative Campaign, which will help in the upkeep.

The home was built to full size and, in order to show exteriors of different architecture, was divided by a 15-ft. court into two bungalows. One, of Spanish type with stucco exterior and composition shingle roof, contains living room, bedroom and bath. The other, Colonial, with redwood shingles and siding, has kitchen, dining room and laundry. Each covers a floor space of about 20 x 25 ft.

The vestibule of the Colonial half of the bungalow is lighted by a ceiling unit, an illuminated house number is affixed over the entrance, and an artistic bracket light on the side of the house provides illumination for the yard.

A center fixture of silver with enclosed glass unit and six silver brackets with glass shades light the dining room. There are three duplex convenience outlets in the walls, all 18 inches above the floor, and one floor type outlet. The room is equipped with waffle iron, coffee urn, chafing dish and fan and is heated by a 3-1/3-kw. flush type air heater. A switch for a service buzzer is provided under the table, and outlets are installed for a complete radio and loud speaker.

The kitchen is well equipped. It has an electric range, dishwasher, refrigerator (set flush), bread and cake mixer, drink mixer, toaster, exhaust fan, motor for buffing and polishing, and a 2 1/2-kw. portable air heater. Duplex convenience outlets are provided on either side of the sink and above the breakfast table, as well as a loud speaker outlet to connect with the radio set in the dining room. The room is lighted by a 100-watt enclosed unit in the center, with additional lights, controlled by separate switches, over the sink and breakfast table.

In the laundry the equipment consists of a 5-kw. water heater, 2 1/2-kw. portable air heater, washing machine, and an electrically heated and operated mangle. Two 75-watt enclosed ceiling units, controlled from a bull's-eye switch in the kitchen, provide adequate illumination. Outlets are also provided for iron, fan, etc.

The Spanish idea, exemplified in the other half of the bungalow, is carried out in the especially designed bracket lights placed on each side of the entrance and in the living room, where a 3-1/3-kw. air heater has been installed in the fireplace. There is also a 2 1/2-kw. portable air heater at the other end of the room. Five duplex wall brackets and two ceiling units comprise the lighting fixtures. Outlets include one floor type, five duplex wall type, and one for complete radio set, the latter connecting with a separate aerial.

The bedroom, simply furnished, is particularly well equipped with conven-

ience outlets, four duplex type making possible the use of floor lamp, bed lamp, warming pad, hair dryer, curling iron, vibrator, sewing machine and fan. There is also a loud speaker outlet for connection with the living room radio set. The lighting fixtures in this room are a three-light center cluster and four wall brackets. A 2 1/2-kw. flush type air heater is installed under the window.

Enclosed ceiling units light hallway and bathroom, with an additional bracket light controlled by a switch, on either side of the lavatory. A duplex convenience outlet beside the mirror provides for the use of an immersion heater, milk warmer, vibrator, hair dryer, and other appliances. A 2 1/2-kw. portable air heater is included in the equipment.

The light in the linen closet is controlled by a door switch. Lights in the other two closets are on separate switches. A burglar alarm is installed on the bedroom window to show the principle of operation, and an adequate number of three- and four-way switches add to the convenience of the control of the lights.

The electric home is open at all times. Guests are registered, and interested parties are given California Electrical Cooperative Campaign literature. All the equipment is connected and in actual use, and it is planned to serve luncheons and give cooking and other demonstrations. The office of the contractor-dealers' association is on the same floor of the building, and the association will make rough electrical layouts for anyone desiring this service. A particular advantage of this home is the fact that it is permanent so that an interested visitor may return as many times as he likes to inspect the details of the electrical installation.

No signs are placed on any of the appliances or fixtures, and visitors are told that there are other makes equally as satisfactory. The cooperative basis of the undertaking is further emphasized by the following placard placed at the entrance: "The electrical features of this home have been made possible by the members of the electrical industry. The appliances and equipment which are shown here are only one of many types and styles made by the different manufacturers to serve the purpose; it is impossible to display them all." This spirit of cooperation is well illustrated by the fact that the local journeymen installed the wiring without charge, twenty-five of them donating their services for one entire Sunday to do the roughing in. The general construction and furnishing of the home was in charge of Miss Watson, manager of the Building Material Exhibit.

The opening of the home to the general public was celebrated by a banquet given by the contractors for their wives and guests.

The Edison Electric Appliance Company, Portland, Ore., has moved its headquarters from 412 1/2 Stark Street to 10 North Broadway. The new location furnishes enlarged facilities for window display, show room and shop.

Electragists' Association Holds Its Annual Convention

The annual convention of the Association of Electragists, International, was held at West Baden, Ind., Sept. 29-Oct. 4. The meeting was marked by the large attendance and by the excellence of the papers presented. These papers embraced all phases of contractor-dealer activity and were the work of authorities on their respective subjects. Among the most interesting of the many items considered by the gathering was a proposed uniform electric ordinance for general guidance and use by municipalities in framing ordinances governing electrical installations and inspection.

Distribution and merchandising problems occupied a conspicuous place on the convention program as did technical matters, a report on which was made by A. L. Abbott, technical director of the association. L. G. Ross, chairman of the standardization committee, reported that the majority of the members favored the elimination of black conduit and fittings and the exclusive use of galvanized or sherardized material, commonly known as "white" fittings.

A feature of the convention was the application of the entire membership of the California State Association of Electrical Contractors and Dealers for membership in the national association. The California organization was admitted in a body and will in the future be known as California Electragists.

Accounting Problem Questions Answered by Expert

The Journal of Electricity has made arrangements with F. V. Mitchell, public accountant of San Francisco, to answer, in these columns, such questions as may be asked on accounting. All readers are invited to forward their inquiries to The Editors, Journal of Electricity. The answers will be published as soon as possible following the receipt of the inquiry.

Question:

Why is the overhead expense apportioned to the wiring and fixture departments distributed over the various jobs on the basis of material and labor?

Answer:

The overhead is distributed over the jobs on this basis because material and labor represent the prime costs of the jobs, and it is necessary for every dollar's worth of prime cost invested in a contracting job to carry its proportion of the total overhead, or there will be no net profit at the conclusion.

The Woodbury Radio Electric Company is the name of a new electrical store at 304 Salmon Street, Portland, Ore. Electrical appliances and high grade radio sets and supplies are handled in the new store which is comfortably furnished with wicker chairs to facilitate demonstration of radio reception.

The Electric Machinery Manufacturing Company, Minneapolis, Minn., has recently issued Bulletin No. 840 descriptive of its vertical alternators.



THE permanent electric home recently opened in Sacramento, Calif., within the Building Material Exhibit, was divided by a 15-ft. court into two bungalows, of Spanish and Colonial architectural designs, as shown in the center view. Upper left—view of kitchen which is well equipped with modern electrical appliances. Lower left—living room, showing Spanish type fireplace. Lower right—simply furnished bedroom, which has five convenience outlets. Upper right—a group of the journeymen who installed the wiring in the home. The home was built through the cooperation of the members of the electrical industry, working on a non-partisan basis, and this fact is made public on the placard placed at the entrance.



JOBBER, DEALER AND SALES AGENT



Los Angeles Stages Exposition of Model Houses

Advantages of Electric Home Are Vividly Portrayed to Visitors

Investigating Eleven Small Bungalows on Display

With the thought in mind of convincing the purchaser of a lot in the new City Terrace Tract of Los Angeles, Calif., that a practical and attractive home with all modern conveniences could be built and furnished upon their property within a sum which would fit his pocket book, the promoters of this district instituted a small homes exposition. This consisted of eleven small homes of from three to five rooms which were offered for sale complete with all furnishings for prices ranging from \$2,701.60 to \$3,560. All of the houses were wired to a degree above the average and were supplied with convenience outlets and attractive fixtures. One among them was known as the electric home; it was completely equipped with provisions for every modern convenience, and with a sample display of electrical appliances in use. This little 5-room house, complete with all furnishings, even down to the kitchen utensils, was sold for \$3,331.90.

These prices were exclusive of the lot, a neat sign in front of each bungalow announcing the price at which it could be purchased, together with the lot—and that at which it could be duplicated upon any other City Terrace lot. Along with the individual lecture given each visitor by the caretaker of the home, a booklet on the subject of the exposition was passed out, containing an architect's drawing of each of the homes, together with the floor plan and a brief description. In addition a modified floor plan for a larger home showing the electrical wiring and the outlets recommended by the California Electrical Cooperative Campaign was included.

Advertising and publicity were well handled through the various newspapers during the week which preceded the exposition, and throughout the period of its display. Cars running to the district bore special signs and conductors and motormen were prepared with directions on how to reach the spot. Large sight-seeing buses met all cars to carry visitors the short distance between the car line and the exhibit. In addition maps were furnished to automobilists that visited the display in their own cars.

The houses were open from one to five o'clock every day of the week with the exception of Monday and Tuesday. These hours were fixed upon after a study of the attendance of numerous electric home exhibits, which indicated

that the first of the week was a slack period—and also that the afternoon hours were those of the greatest importance. Programs of music and vaudeville stunts interspersed with lectures on home decorating and on the principles of electrical installations were furnished under the protection of a large awning, where seats and a platform were provided. These programs were announced in the newspapers and attracted large crowds. In addition to this main gathering place, small shelters with awning protection and comfortable chairs were provided at different points about the grounds.

of visitors as to why all the houses were not electric homes, and to these it was explained that the California Electrical Cooperative Campaign which had supervised the wiring and furnishing of the electric home was not called in until the other homes had already been constructed. As a matter of fact, the contrast between the different types of houses and the difference in wiring made effective sales talk and adequately told the story of electrical convenience. Convenience outlets wherever needed, more attractive fixtures, lights beside the bureau in the bedroom and on either side of the shaving mirror in the bathroom instead of center lights, and other conveniences, were obvious advantages to all who inspected. A tribute to the effectiveness of the installation, as well as to the importance attached to electrical convenience by the public, is to



Three to seven thousand visitors per day were conducted through the group of houses on display.

The particularly distinctive feature of the exhibit was, of course, the fact that these small dwellings were complete in every detail. China was stacked on the shelves, silver reposed in the drawer of the sideboard, kettles hung in the kitchen ready for use. Rugs and hangings as well were included in the purchase price. The details of the equipment were listed in the case of each house, articles which were extra, such as the grand piano, being carefully specified so that there was in no case any misunderstanding.

There was some question on the part

be seen in the fact that the electric home was the first one sold, although several of the others were more attractive in exterior finish.

The furnishing of the homes was carried out by Barker Brothers of Los Angeles, and the wiring of the electric home was in charge of the S & H Service Electric Company of Alhambra. The electrical exhibit was under the supervision of F. N. Smith of the California Electrical Cooperative Campaign, who also furnished talks on electric home convenience at various times during the exposition.

Silver Cup Produces Results in Appliance Sales Campaigns

As a stimulus to competitive sales effort among employees of the Pacific Power & Light Company, Portland, Ore., during merchandising campaigns, Guy W. Talbott, president of the company, has offered the silver cup shown in the accompanying photograph to that district organization reaching the highest percentage of quota in any major campaign carried on throughout the several districts in the territory served by the company. Major campaigns are understood to mean range, washing ma-



"President's Cup" of the Pacific Power & Light Company.

chine, vacuum cleaner or other large appliance campaigns conducted by V. H. Moon, appliance sales superintendent of the company.

The trophy, which is known as the "President's Cup," is engraved on one side with the following inscription: "Pacific Power & Light Company—Pre-

sented by Guy W. Talbott, President, for Excellence in Sales." On the opposite side, space is reserved for the engraving of the name of each winning district with the title of the campaign and the date. It will become the permanent property of the first of the seventeen districts of the company that is successful in winning it in three campaigns, and in the meantime it remains on display in the office of the last winning district until it is again placed in competition and won by another district.

As can well be imagined, the trophy is keenly desired by the employees of the various district organizations for display to their friends, and in each office in which it has been displayed it has invariably created favorable comment on the part of the customers of the company. Since it was first offered in the fall of last year it has been in competition three times, and the reverse side now carries the following inscriptions: "Won By—Walla Walla, Thor Washers, 1923," "Pasco-Kennel, Premier Cleaners, 1924," "Hood River, Electric Ranges, 1924."

The Electric Controller & Manufacturing Company, Cleveland, Ohio, has recently placed on the market an automatic high voltage compensator, built for voltages up to 2,500. With the exception of the overload panel which is mounted on the top of the tank, the compensator is entirely submerged in oil, and the tank is so designed that the compensator is dust-proof, weather-proof, vapor-proof and fireproof. It is pushbutton operated and entirely automatic and may be installed either indoors or outdoors.

The Sangamo Electric Company, Springfield, Ill., has appointed L. Brandenburger as its representative at Salt Lake City, Utah. In addition to the Sangamo line, Mr. Brandenburger also represents the Delta-Star Electric Company, The Wagner Electric Corporation, The States Company and The Roller-Smith Company.

BUSINESS HONOR BANNER HOISTED TO HALYARD

By JOE OSIER

A few years back, when a three-way suit was the proper checker and "Two Little Girls in Blue" was being belittled by every bloke in the block—

The business world stood for many questionable practices on the ground that "business is business." In other words, many men of affairs observed that perverted Golden Rule which goes—

Do others before you are done—and—

Sad to relate, no few men engaged in the electrical industry, allied with other bold buccaneers, sailed the business main and scuttled and sunk whomsoever they overtook.

In that day, a business transaction, involving anything from a seed to a Century note, was a duel of wits and the plunder went to the one who could lie and cheat and steal best, but—



In the "Good Old Days"—maybe, but the customer didn't return.

Then, as now, the winner in this contest won a sorry victory, losing customers and cash daily, weekly, monthly, until the exits were reached and a new name appeared on the store or shop windows.

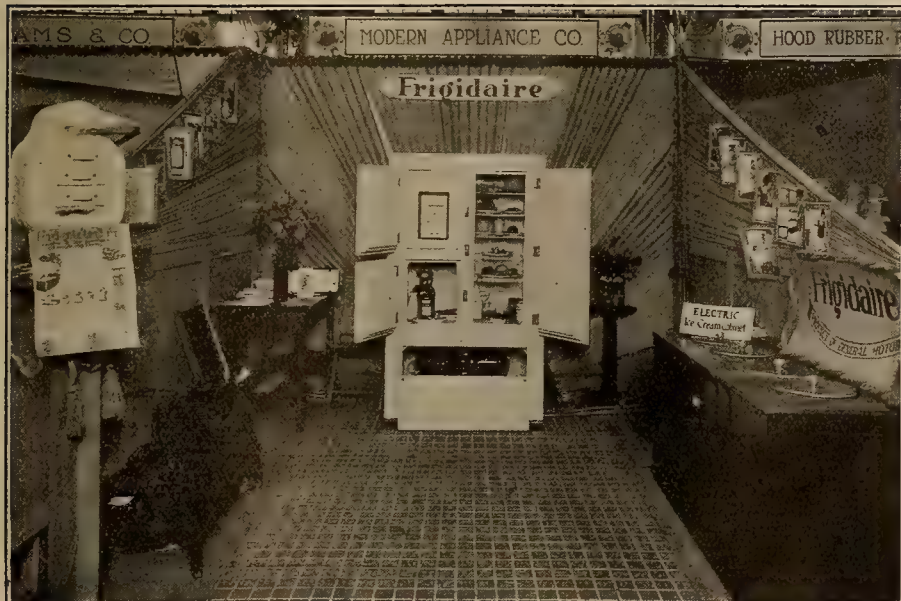
Today, a happier, better, brighter era has dawned and any man of the trade, worthy of the name, will tell you that business honor should be and is nourished as was personal honor—

Decades ago when brave men met on the dueling field and hacked or blew each other into the hereafter because one or the other passed the lie or spoke out of his turn or something.

In this age, Allah be praised, every man in every branch of the electrical industry, from the executive heads to the apprentice boys, knows that he has to play fair and do his dance according to the book—

Else he will be tagged and sent out to the bench for keeps, because—

In this day, business honor comes first, service next and profit afterwards.



Booth of Modern Appliance Company, Seattle, displayed at the Pacific Northwest Merchants' Exposition at the Bell Street Terminal in Seattle, the week of Aug. 17 to 23. The attendance at the exposition is said to have been 350,000 and more than 7,000 merchants from all parts of the Northwest attended the exposition.

Working Against a Quota in the Washer Campaign

Utah Power & Light Company Makes 112 Per Cent of "Bogie" in Washing Machine Campaign Lasting One Month

By M. L. CUMMINGS, JR.

The results accomplished by the Utah Power & Light Company in its annual washing machine campaigns have for the past several years aroused much interest. The last campaign was no exception. During the period the company sold 1,154 machines, an achievement which is truly remarkable, particularly in view of the fact that of the 64,000 residence customers on its line, about 22,000 were already users of electric washing machines. Past experience, however, demonstrated that it could be done and it was done.

In carrying out the most recent sales drive, approximately the same plan was followed that has been used in the previous years. Salesmen from the district offices of the company were used to call on customers and extensive advertising was done to arouse interest in the automatic washers that were made the subject of the special offer.

The famous slogan "A Copper Washer for a Silver Dollar" was again brought into use. This slogan has now been used in three successive campaigns, and its value as an advertising feature seems to increase each year. It is instantly identified by the public with the Utah Power & Light Company's washing machine campaign, and has proved a remarkable stimulator of public interest in this particular activity.

Newspaper display advertising was used, as heretofore, and a great deal of attention was centered also on store and window displays. By special permission, several such national celebrities as Mutt and Jeff, Barney Google, Andy Gump and Pa's Son-in-Law were brought into action in window displays, and attracted considerable attention.

These window displays that featured the comic strip characters were of course centered around the washing machine displays. The figures were cleverly tied into the general sales programs and presented in a humorous way the sales arguments for the washer. In many of these displays the figures were animated by means of strings that were run over pulleys and attached to one of the pins in the rotating dolly. To make these windows of the most value the displays were changed frequently and during portions of the time notations were made on the glass nearest the sidewalk, stating how many washers had been sold to date in the campaign.

Banners were attached to all street cars operating in Salt Lake City and in other cities where these cars were used. Company automobiles were used to display banners and to attract attention to the campaign. To reach the families through the boys of the various cities, skull caps bearing the slogan, "A Copper Washer for a Silver Dollar," were passed out in large numbers.

In arranging for the sale of the washing machines, the Utah Power & Light Company set the down payment at \$1. This low initial payment with the \$5 a month installment proved to be a sales stimulator in the same way that it had in the previous campaigns.

Interest of the members of the sales force of the company was aroused by

means of several clever publicity stunts. In the first place a quota or "bogie" of 1,030 machines was set for the campaign. This sum was divided proportionately among the nine districts of the company, according to the number of consumers and the known number of washing machines in use. In addition to this "bogie," the sales forces worked against the record set in the 1923 campaign.

The principal means of keeping the interest of the sales force at a high pitch was a series of daily letters announcing the results achieved by the various districts. These letters were mimeographed and were sent out during the last ten days that the drive was in progress. To make the daily reports more than just sales managers' bulletins, and to encourage the spirit of rivalry among the districts, these messages were put out in the form of prize fight bulletins, every day being considered as a separate round. Ring-side terms were used throughout, the results of the 1924 campaign being impersonated by "Andy Gump," the "bogie" by "Red Quota" and last year's results by "Kid 23." Each machine that was sold was counted as a blow for "Andy" and whenever a district failed

The WISE LITTLE BRIDE Who Wants to Stay Young.

**SHOULD HAVE AN
AutoMatic Washer**



THE wise little bride wants to be as smart as that the new husband will be very proud of her—and stay young, too, to keep all her beauty. They hope about things as bright and fresh as on her wedding day. She wants to do her own laundry work—she's not in the old-fashioned, drudging way that will make her look old in a year or two.

Fresh complexion, rosy cheeks, sparkling eyes and that health that brings youthful vigor. These are the things that the AutoMatic helps wonderfully in preserving by taking drudgery out of the business of good housekeeping.

**Every
Automatic We Sell
is Backed by Our
GUARANTEE
and WELL KNOWN
SERVICE**

**Special Terms
for MARCH—
DOWN
1st \$5
MONTH**

UTAH POWER & LIGHT CO.
EFFICIENT PUBLIC SERVICE

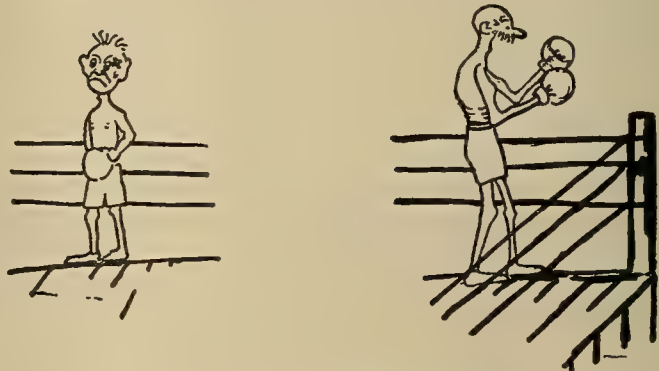
Advertisements of this character were used to arouse interest of the public in the campaign.

to place a machine for a day credit for the blow was given to "Red Quota." The fight started between "Andy" and "Red Quota" and continued for nine rounds until the "bogie" had been reached. As soon as the number of sales reached the predetermined quota, "Kid 23" was sent into the ring and according to the bulletin issued on "Round Ten," "Andy knocked 'Kid 23' for a row of ash cans and is the hero of the day."

ROUND FOUR.

Washer Grams

Issued periodically during the big Automatic Washer Campaign, by the General Sales Department of the Utah Power & Light Company.

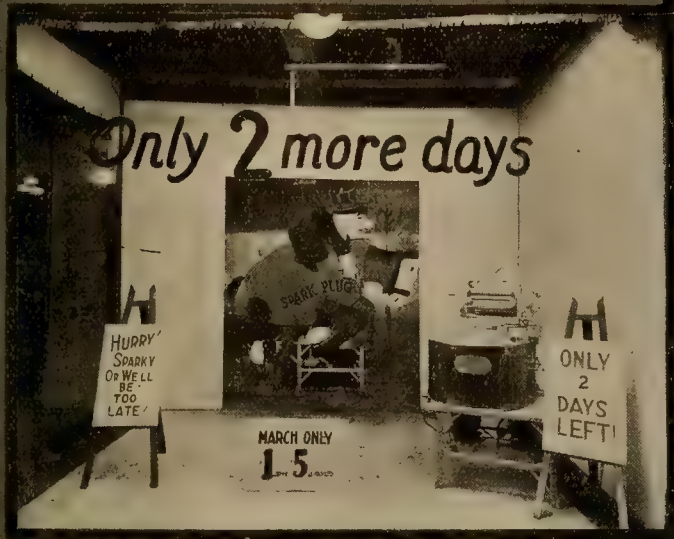


ROUND FOUR (A GREAT ONE)

Andy opened a furious attack with 3 solid Bingham's. Red scored an Evanston blank. Andy got over 4 telling Idaho Falls and 5 nasty Logans—Red went to his knees. They clinched. Andy got the best of the in-fighting with 6 Ogdens. On the break Andy landed a P.C. uppercut. Andy opened the wound on Red's face with 7 terrific Provos in quick succession. Andy showed plainly that he intended to win as quickly as possible and opened up his famous Salt Lake attack. A succession of 24 rights, lefts, ups, downs, over and across sent Red to the canvas several times. He managed to get up each time before the count. Andy whipped across a Colorado rabbit punch and Red went to his knees. The bell saved Red. Point by point summarized:

Divisions	Sales for Day	Quota	Sales to Date	% Bogie Secured
Bingham.....	3	20	26	130
Evanston.....	0	25	23	92
Idaho Falls.....	4	55	83	151
Logan.....	5	115	91	79
Ogden.....	6	210	132	63
Park City.....	1	35	54	154
Provo.....	7	110	118	107
Salt Lake.....	24	425	278	65
Wes. Colorado.....	1	35	40	114
Totals.....	51	1,030	845	82

The prize ring bulletins, issued daily, carried the results to the sales force in an interesting manner.



TYPICAL window displays used by the Utah Power & Light Company to advertise the fact that another washing machine campaign was being conducted by that utility. Displays were changed frequently in order to maintain the attention value of the novel advertising mediums. Many of the characters used to stimulate interest in the campaign were kept in motion, during the time that they were in the windows, by means of cords running to washing machines that were operating. The novel displays played an important part in aiding the company's salesmen to oversell the original quota.



INDUSTRIAL NEWS



Court Grants Loveland Right to Erect Municipal Plant

The Colorado Supreme Court on Oct. 20 handed down a decision giving the City of Loveland the right to erect a municipal light and power plant and declared that the state public utilities commission which fought the erection of the plant has no jurisdiction in such cases. The decision ended a long court fight over the construction of the plant, a bond issue for which was voted by Loveland citizens over a year ago.

Upon disposing of the bonds early this year construction of the disputed hydroelectric power plant was started and has been continued regardless of litigation. By the decision recently announced the supreme court declared that the state public utilities commission cannot interfere with cities under the Home Rule provision of the state constitution in regard to public utilities.

The original suit to prevent construction was filed in the Larimer County court on a demurrer entered by Loveland and the city won the decision and the appeal was made to a higher court on behalf of the public utilities commission asking writ of supersedeas because of certain alleged errors in the original hearing. The supreme court meeting in special session affirmed the decision of the district judge and denied the supersedeas. Although the legal technicalities involved in this case did not demand such a decision the supreme court with all justices participating went into the case on its merits and decided it on that basis rather than on the application for supersedeas.

Construction of the plant was fought by the Public Service Company of Colorado, successor to the Western Light & Power Company, on the ground that the community was being given cheaper light and power service than could be had from a municipal plant. With this the public utility commission was in accord and therefore refused to issue a certificate of convenience and necessity allowing the construction of the plant. Attorney-General Wayne C. Williams refused to enter suit to enjoin the city from proceeding with its construction. Whether or not the municipality will take over the present distribution lines and the company now serving it is not known.

Northwestern Electric Company Applies for Power Site

Late advices indicate that the Northwestern Electric Company, Portland, Ore., may soon undertake a large hydroelectric development on the Lewis River in Cowlitz and Clarke Counties, Wash. The company has applied to Marvin Chase, state supervisor of hydraulics, Olympia, Wash., for permis-

sion to appropriate the entire flow of the north fork of the Lewis River, for the purpose of developing 60,000 hp. at an estimated cost of \$4,000,000. Formal announcement of the nature of the project has not been made.

On the grounds that the diversion of the entire flow of the river would damage his holdings in that vicinity. George H. Funk, Olympia attorney, has filed a protest against granting the application. Mr. Funk contends in his protest that the proposed plant would shut off a tract of standing timber which he owns and that it would also render valueless a 140-acre tract of agricultural land, should the power company be allowed to proceed with the development.

Temporary Rate Increase Denied Ontario Power Company

The California Railroad Commission has denied the application of Ontario Power Company for a ten per cent surcharge on all bills based on meter readings taken between July 6, 1924, and May 6, 1925. The company alleged that due to the drought conditions its operating expenses were increased largely through the purchase of an unusual amount of electric energy, thereby reducing its net operating revenue for the year. Commissioners Seavey, Shore and Whittlesey in the majority opinion state that the company will earn 4.8 per cent on its investment in 1924, and is not entitled to an increase due to temporary increase in operating expenses. Commissioners Brundige and Martin in a dissenting opinion, hold that the same conditions applying in the Southern California Edison case hold with equal force in this application.

Colorado Power Site Subject of Application.—The Southern Power Company has applied to the Federal Power Commission for a preliminary permit covering a proposed project on Grape Creek in Fremont and Custer Counties in Colorado. It is proposed to construct two reservoirs with capacities of 97,000 acre-ft. and 15,000 acre-ft., respectively. Some 20,000 ft. of conduit will be required to deliver the water to two power houses. Grape Creek is a tributary of the Arkansas River.

Tacoma Engineers Hear Talks on Cushman Project.—The Tacoma, Wash., Chapter of the American Association of Engineers was addressed at its last meeting by A. F. Darland, superintendent of electrical construction of the Cushman power project, who talked on "Electrical Features of the Cushman Project," and by J. V. Gongwer, in charge of design for the Narrows transmission span of the project.

Decision Reached in Valuation of Seattle Substations

After a deadlock lasting nearly a year, the board of arbitration, created to fix a valuation on the North Seattle and Fremont substations of the Puget Sound Power & Light Company, Seattle, Wash., has finally submitted a divided report to J. D. Ross, superintendent of lighting for the city. In the terms of the contract under which the city purchased the street railway system from the company, the city was permitted to take over the street railway load of approximately 25,000 kw. in blocks of 5,000 kw., giving the company one year's notice of such intent. The first notice of intent to take over the first block of 5,000 kw. was given the company two years ago, and the two substations mentioned above were designated. Two of the arbitrators, one appointed by the company and one selected jointly by the city and the company, have fixed a price of \$141,317 for the equipment in question. The third arbitrator, appointed by the city, submitted a minority report placing the valuation at \$111,317.

Superintendent Ross points out that the responsibility for the decision rests with the city council, and recommends that the city, "if it can be done legally, accept the present arbitration, and start immediate condemnation proceedings for the other five substations that will be taken over under the contract."

Water and Power Act Condemned by California Electragists.—Contending that the people of California are well served by the present system of regulated electric utilities and that there is no need for state ownership and operation of power systems, the executive committee of California Electragists passed a resolution calling upon its members to oppose the California Water and Power Act. The resolution adopted also calls attention to the facts that there is no reason for adding half a billion dollars of tax-free bonds to the securities outstanding, that unsound political and economic principles are involved in the Act, and that it would give a political board of five persons the right to set up electrical contracting and retailing stores in every city in the state in direct competition with private concerns paying taxes.

Water Power Report Is Issued.—A report on the "Water Powers of Southeastern Alaska" has been prepared for the Federal Power Commission by J. C. Dort, hydroelectric engineer, U. S. Forest Service. The report covers developed and undeveloped water power projects. Seventy-seven tables and 22 illustrations are included in the report.

Better Home Lighting Campaign Gains Headway in Denver

Although late in getting started due to problems arising in the distribution of material, the Better Home Lighting Campaign in Denver, Colo., was inaugurated late in October under the direction of the Electrical Co-operative League of that city. Instead of using the schools, arrangements had to be made for distribution of literature through other channels and latest reports indicate that 71 stores were listed, a majority of which were electrical.

Local prizes offered by the league are valued at \$750 and will be awarded either in merchandise or in cash, according to E. H. Coe of the Public Service Company of Colorado who has been aiding the league staff in arranging the campaign in Denver. Five judges, all prominent citizens of the community, have consented to serve.

Window display material has been arranged and special auxiliary posters have also been supplied. In addition to advertising in the local newspapers, the campaign has been made to include all the school papers of the city. In addition to Denver, there are 114 other communities in Colorado participating in the contest.

Denver Water Board Surveying Sites on South Platte

As a preliminary move to the launching of a comprehensive water power and storage project through the construction of two dams on the South Platte River engineers have been sent out by the Denver Municipal Water Board to test foundations for the structure and check the rights for the sites recently secured by the commission. The project provides for the storage of double the amount of water impounded in the present Cheesman dam and contemplates the diversion of considerable water from the western slope of the state at a cost of about five million dollars. It is understood that a bond issue for this amount will be requested at the next municipal election in Denver.

Present plans call for the utilization of the present lost power in the South Platte River which would be made possible by the two new storage reservoirs. The erection of a power house above the proposed Eagle Rock dam would provide considerable power which could be sold by the municipality at a profit, thereby reducing the cost of operation of the water system.

Inasmuch as the sites have been secured on surveys made a number of years ago it is possible that a change may be found necessary in the plans for the actual dam and power house construction. Because of the increasing water consumption in the city of Denver the municipal commission has given notice that additional facilities must be provided and present plans contemplate the construction and operation of a power plant which will utilize all available waters.

By many this action is believed to be the initial step in the presentation, to the citizens of Denver, of a municipal ownership project to be considered in 1926 when the present franchise of the Public Service Company of Colorado expires.

Courteous Service Club Contests Are Announced

\$\$\$\$\$ For Your \$MILE\$ \$\$\$\$\$

Two contests are being conducted by the Courteous Service Club Committee of the Pacific Coast Electrical Association. Fifty dollars in cash is to be distributed among the prize winners in these two contests which have just started.

Here are the two contests:

Contest I

Twenty-five dollars in prizes to be awarded for the best slogan, of not over ten words, for use by the Courteous Service Club during 1925. The first prize winner will receive ten dollars; the second, five dollars; and the third to sixth inclusive will each be awarded two dollars and fifty cents.

Contest II

For the best true story of not over two hundred (200) words in length illustrating the application of courtesy by an employee, the Courteous Service Club Committee of the Pacific Coast Electrical Association will award a first prize of ten dollars. A second prize of five dollars will be given for the second best story and the persons who submit the stories which shall be adjudged to rank from third to sixth best will each receive two dollars and fifty cents.

Anyone, except the members of the Courteous Service Club Committee and their immediate families, shall be eligible for participation in the contest.

The names of the winners, together with the winning contributions, will be presented in the Jan. 1, 1925, issue of the Journal of Electricity. Enter the contests now by sending your entry to Courteous Service Club, c/o Journal of Electricity, 883 Mission Street, San Francisco, Calif.

Contest Rules

The rules for the two contests are the same and are as follows:

1. The contest is open to anyone except members of the Courteous Service Club Committee of the Pacific Coast Electrical Association and their immediate families.

2. In Contest I the slogans submitted must be of ten words or less. In Contest II stories must be true and of two hundred words or less in length.

3. The judges will be the members of the Courteous Service Club Committee of the Pacific Coast Electrical Association and are as follows:

R. A. Balzari, Westinghouse Electric & Manufacturing Company; Victor Hartley, California Electrical Cooperative Campaign; M. S. Barnes, General Electric Company; G. C. Tenney, Journal of Electricity; H. L. Bronley, The California Oregon Power Company; O. S. Clifford, Truckee River Power Company; S. W. Green, San Joaquin Light & Power Corporation; E. G. McCann, Pacific Gas and Electric Company; Lloyd H. Hardy, Great Western Power Company; R. E. Smith, California Electrical Cooperative Campaign; Wm. Cyr, San Diego Consolidated Gas & Electric Company; E. B. Cummings, Southern California Edison Company; R. E. Bacon, Southern California Edison Company; W. A. Knost, Electric Club, Los Angeles; D. L. Scott, Los Angeles Gas & Electric Corporation.

4. Prizes to be awarded separately in each contest are as follows: First prize, ten dollars (\$10); second prize, five dollars (\$5); third to sixth prizes, inclusive, two dollars and fifty cents (\$2.50) each.

5. In case of tie the full amount of the prize will be awarded to all of the tying contestants.

6. Entries are to be sent to Courteous Service Club c/o Journal of Electricity, 883 Mission Street, San Francisco, Calif.

7. Entries must be received before midnight of December 1, 1924.

8. Prizes will be announced in the Jan. 1, 1925, issue of the Journal of Electricity and the winning contributions will be published in that issue.

9. No entries will be returned to contestants and the right of the Courteous Service Club to use slogans and stories shall be conceded upon filing of entry.



Anaheim, Calif., Voters Reject Municipal Power Project.—By a vote of 3 to 1, citizens of Anaheim, Calif., at a special election on Oct. 18 defeated a \$240,000 bond issue for the purpose of constructing a municipal power plant there. The city is now distributing energy which is purchased from the Southern California Edison Company.

The figures brought out during the campaign indicate that residential consumers in the city are paying 8 per cent more for their lighting service than consumers in similar cities served directly by the Edison company. Business houses are paying 20 per cent more to the municipality than those where the private company distributes energy.

High Lights of Lighting Campaign in Northwest

School Board Cooperation Sought and Secured, Budgets Raised and Thirty Per Cent Registration Expected.

Reports of local activity in the Home Lighting Campaign throughout the Northwest reaching A. C. McMicken, regional director, indicate that the campaign is going to be universally successful there. It seems likely that an average registration in the contest of more than thirty per cent of the eligibles in the towns in which the campaign is being conducted in that geographical division will be realized. The highest percentage yet recorded has been that at Yakima, Wash., where approximately 1,000 registrations have been forthcoming from an eligible list totaling about 2,000. Portland is the largest city in the division participating in the contest, and there the registration will run to about forty per cent. The medium-sized city of Astoria, Ore., reports about forty-four per cent.

In general it is true that a greater interest in the contest is manifest in those communities in which the active cooperation of school authorities was obtained. In many instances this cooperation was secured only after considerable effort on the part of local committees. For instance, in Portland, the school board, in the first meeting at which the plan of campaign was presented, refused to have anything to do with it. To combat and reverse this attitude, the committee assigned one of its members to see one member of the board at his home in the evening to attempt to sell him individually on the idea. At the next meeting of the board a vote to cooperate with the campaign was unanimous. It is reported from various other cities that the same methods were applied in individual instances with similar results.

Some few districts report that certain schools are making entrance in the contest compulsory. In such cases, examples of which are the high schools of Pasco, Dayton and Waitsburg, Wash., the percentage of registration is high.

Universally over the geographic division substantial budgets have been established and raised. The absence of electric clubs in most of the districts has thrown the burden of financing and administering the campaign on the power companies, which have without exception accepted the responsibility for furnishing the bulk of the funds for expenses and prizes, as well as personnel for carrying out the plan. In a few communities the financial aid of the contractor-dealers has been actively solicited and in some cases the response has been gratifying, but, in general, the power companies, by a substantial contribution, have made success possible. In the territory of one of the power companies \$4,500 has been raised, of which the dealers contributed \$500 and the power company \$4,000. In Portland, where \$6,800 has thus far been raised, the two power companies contributed most of the total on the basis of so much for each residential customer served, and a very considerable balance was largely subscribed by the jobbers and manufacturers.

From incomplete reports reaching Mr. McMicken, it is gleaned that C. Louis Collins, field secretary of the Rocky Mountain Electrical Cooperative

Campaign, Salt Lake City, Utah, co-operating with P. M. Parry, of the Utah Power & Light Company, and regional director for Utah, is having excellent success in 225 communities in Utah, northern Colorado and southern Idaho. J. F. Orr, of the Idaho Power Company, and regional director for Idaho, expects to produce an average of over thirty per cent registration of eligibles in twenty-six communities in southern Idaho and eastern Oregon. E. L. Crockatt, of the Eastern Oregon Light & Power Company is meeting with success in his district of eastern Oregon in the vicinity of Baker. J. J. Buchter, of The California Oregon Power Company, has the campaign well organized in forty-three communities in southern Oregon and northern California. George T. Bragg, of the Pacific Power & Light Company, will show a registration of nearly forty per cent in eastern Washington communities. C. M. Brewer, of the Mountain States Power Company, reports that good headway is being made in the various districts of his company in Oregon, Idaho and Montana. Lewis A. Lewis, of The Washington Water Power Company, and president of the Spokane Electric Service League, heading the Spokane committee, reports that in spite of a late start he expects to see a very successful campaign conducted in his district. H. J. Gille, of the Puget Sound Power & Light Company, has completed detailed arrangements for conducting the campaign in many of the towns served by his company, in western Washington outside of Seattle.

Judging from items appearing in the News Bulletin issued by the Lighting Educational Committee covering campaign activities over the entire United States, it seems possible that the results in Portland will not be exceeded in any city of its size in the country. The prime reasons for the success in Portland are found in the whole-hearted cooperation of all branches of the electrical industry, and in the energy being put into the conduct of the campaign by the executive committee. This committee consists of Francis M. Murphy, Portland Electric Power Company, chairman; F. N. Averill, Fobes Supply Company; George Boring, Pacific States Electric Company; J. C. English, English Company; C. M. Higbee, electrical contractor; A. S. Moody, General Electric Company; J. C. Plankinton, Northwestern Electric Company; J. H. Sroufe, Jaggard-Sroufe Company; W. P. Strandborg, Portland Electric Power Company, and Carl L. Wernicke, Westinghouse Electric & Manufacturing Company. J. S. Groo acts as secretary of the committee.

Intermountain Edison Lamp Men Hold Sales Meeting

A. D. Page, sales manager, and G. C. Osborn, assistant sales manager of the Edison Lamp Works, were the principal speakers at a general sales meeting held at Salt Lake City, Utah, Oct. 9, attended by men affiliated with the Edison Lamp Works. Ernest L. Dee, district sales manager for the Inter-

mountain territory, presided at the meeting.

Mr. Osborn, in opening his discussion, called attention to the importance of the lamp in the electrical industry, pointing out the vast contribution which it has made in increased business to the central station and to other branches. The speaker emphasized the necessity of lamp dealers rendering service to customers in assisting them to select the right lamps for the fixtures in use. On the subject of advertising, he called attention to the necessity of continuous use of material in order to bring the article to the attention of the public, and stated that national advertising must be backed up by local display in order to get the proper results.

Mr. Page stated that it should be the aim to sell light rather than the lamp itself. He spoke of the remarkable progress in the use of lamps, and pointed out the enormous future possibilities. He also stressed the importance of service in the lamp business.

A dinner in the evening was attended by a large number of electrical people. This was featured by talks by J. A. Kahn, president of the Capital Electric Company, of Salt Lake City, in which he outlined some of the accomplishments of the Rocky Mountain Electrical Cooperative League; by Mr. Osborn and Mr. Page, and by R. M. Bleak, superintendent of lighting and appliance sales of the Utah Power & Light Company. The last three speakers talked briefly regarding the Home Lighting Contest.

Overhead Systems Bureau Holds Meeting in Los Angeles

At the Sept. 18 meeting of the overhead systems bureau of the Technical Section of the P.C.E.A., held in Los Angeles, Calif., the decision was reached that the principal work of the committee would be in connection with the contemplated revision of General Order No. 64 of the California Railroad Commission. It was also decided that a new committee should be appointed to outline a general plan for distribution transformer standardization. This committee will get the opinion of the various operating companies and manufacturers as to what can be done in the way of greater uniformity in external shapes and dimensions, locations of leads and electrical characteristics.

A new committee to investigate line construction costs has been organized and will endeavor to bring out comparative labor cost data on line construction. These cost data studies are not to include transmission lines at present. The various other committees announced the work scheduled for the year and W. G. Kelley, chairman of the national overhead systems bureau, addressed the bureau on the general work of the national committee.

Manufacturers Exhibit at Progress Exposition.—Many of the leading electrical manufacturers exhibited their products at the recent Progress Exposition held in Schenectady, N. Y., under the auspices of the Chamber of Commerce and the municipal government. The Mica Insulator Company, represented on the Pacific Coast by Electrical Specialty Company, Inc., was awarded first prize for its exhibit in the manufacturers' class.

Salmon Elevator to Be Tried Out on White Salmon River

To work out the possibilities of taking large salmon over a high dam to the upper waters of the spawning rivers of the West, and then to get the young salmon down again, will be the purpose of experiments authorized by the fish and power committee of Oregon and Washington at a meeting of that body in Portland, Ore., recently. This committee, of which E. A. Simms, of the Washington Fish Commission, is chairman, was the outgrowth of a hearing in May (Journal of Electricity, June 1, 1924, page 466) attended by representatives of both the fish and power industries and held in connection with the application of the Washington Irrigation & Development Company to construct a 90-ft. dam across the Columbia River at Priest Rapids. The cost of the experiments is being stood equally by the power and fishing interests.

This project and others involving high dams across salmon spawning rivers will be held up until it is satisfactorily demonstrated that the fish can be passed without injury over such dams. It is understood that the Chinook and other kinds of salmon cannot negotiate an ordinary fishway of greater elevation than 40 ft., so that the committee appointed to carry on the experiments is contemplating some form of elevator or escalator.

The first experiment, which will be under the supervision of John N. Cobb, director of the college of fisheries of the University of Washington, and executive secretary of the committee, will be conducted at the Condit dam of the Northwestern Electric Company on the White Salmon River, in Washington, and tributary to the Columbia. This dam, which is 125 ft. high, was chosen because of a fall run of Chinook salmon in the White Salmon, and because there is a ledge half way to the top from which it will be convenient to work in placing the temporary elevator framework. The Link-Belt, Meese, Gottfried Company, Seattle, has submitted a design of a one-basket conveyor which will be tried out.

The second phase of the experiment will be to see if the young fish can pass safely over the larger dams on their way down stream from the spawning grounds to the sea. Professor Cobb already has made experiments in passing them through a small turbine, and now proposes to try sending them over the Snoqualmie Falls, where the result of a sheer drop can be tested. He will

also experiment in a like manner at some dam having an apron sloping down stream so as to get the result on the fish of this kind of a drop.

The personnel of the executive committee in charge of the experiments is, E. A. Simms, chairman; John N. Cobb, executive secretary; J. E. Yates, assistant engineer, Pacific Power & Light Company, Portland; W. D. Shannon, general superintendent, Stone & Webster, Seattle; and Carl D. Shoemaker, fish commissioner of Oregon.

Lamp Sales Conference Is Held By Salt Lake City Men

A special lamp sales conference and dinner was held at Salt Lake City, Utah, on the evening of Oct. 20 under the auspices of the Edison Lamp Works, and presided over by Ernest L. Dee, district sales manager for the Intermountain territory. E. E. Potter, of the sales department of the Edison Lamp Works, and J. W. McIver, manager of the department of publicity of that company, were the guests and the principal speakers.

Mr. Potter outlined some of the sales policies of his concern, and in an interesting manner imparted selling information and advice to lamp dealers. He also spoke of some of his company's proposed plans for the coming year. Mr. McIver discussed the subject of Edison Mazda lamp advertising, and by means of charts and exhibits, brought out many interesting and instructive points concerning his company's activities along this line.

Plans for American Falls Dam Consummated.—Plans for the construction by the federal government of an immense reservoir at American Falls, Idaho, to furnish additional water to irrigate approximately 1,500,000 acres of land in the Snake River Valley have been completed according to Secretary Work of the Interior Department. A check for \$1,989,316 closing the deal for the big undertaking has been given to the secretary by a delegation of Idaho business men headed by Senator Gooding of Idaho. The money represents the payment of the share of the cost of the reservoir to be borne by the American Falls Reservoir district.

Electric Fan Bulletin Issued.—The Society for Electrical Development has devoted Manual No. 109 of Sales Helps to "Selling Electric Fans All-Year-Round." Prospects and uses are both defined in the manual which contains much useful sales information.

Company Increases Hydro Plant Equipment in Montana

The new hydroelectric unit in the plant of the Mountain States Power Company at Big Fork, Mont., was put in service Oct. 1. The unit is an S. Morgan Smith vertical-tube water wheel direct-connected to an Allis Chalmers 2,300-volt, 60-cycle, 3-phase, 1,750-kw. generator. Three 1,000-kw., 2,300-33,000-volt, Moloney transformers are part of the new equipment installed at this plant.

Prior to the bringing in of the new unit, the plant, which is on the Big Fork River, contained two units, one of 500-kw. and one of 750-kw. capacity. This plant serves the Kalispell, Mont., district of the Mountain States Power Company, headquarters of which are at Albany, Ore.

Electric Cookery Is Advertised by Cooking Schools

Attendance at recent cooking schools, conducted by home economists of the Edison Electric Appliance Company under the auspices of various newspapers of the Northwest, indicates that the electrical cookery idea is being widely disseminated. At the civic auditorium, Portland, Ore., Miss Bernice Lowen demonstrated to an average daily attendance of 1,200 in a school conducted by the Portland Oregonian, Sept. 15 to 19. Miss Lowen's schedule next took her to Spokane, Wash., where the Chronicle of that city sponsored the school in the American Theater, Sept. 29 to Oct. 3.

In Corvallis, Ore., a city of about 6,000 population, an attendance of over 500 in one day was the record attained at the school conducted there by the Gazette-Times, Sept. 30 to Oct. 3. Miss L. Carrol Dangler was the demonstrator.

A Hotpoint super-automatic range was used in all demonstrations. In each school, baking contests were held in which substantial prizes were awarded to the winners of the various classes, the principal prize being an electric range, a washing machine, and a vacuum cleaner.

Seattle Electric Club Elects.—At the recent annual election of officers of the Electric Club of Seattle, Harry J. Martin of the National Carbon Company was unanimously re-elected president. Other officers elected are: Phil Apfel, Electric Heating & Manufacturing Company, vice-president; Fred Lushington, Lushington Electric Company, treasurer; P. L. Hoadley, secretary. The directors are J. H. Kelly, J. J. Hayes, C. G. Zokelt, W. M. Meacham and R. T. Reid. The club has changed its regular weekly meeting date from Friday to Monday, continuing to meet at the Gowman Hotel.

Department of Commerce Considers Legal Aspects of Interconnections.—An intensive study is being made by the Department of Commerce of the legal aspects of electrical interconnection. This study is expected to make clear the legislative steps which must be taken to insure the maximum development of interconnection and the free movement of power across state borders.



Condit dam of the Northwestern Electric Company on which the tests will be conducted.

Changes in Personnel of Edison Operating Department

Due to the large increase in its business within the last few years, the Southern California Edison Company, Los Angeles, Calif., has found it necessary to make several changes in the personnel of its operating department. It is in this department, which employs approximately 2,000 men, that the growth of the system is most nearly reflected. The changes, effective as of Sept. 15, follow:

R. E. Cunningham has been appointed assistant manager of operation. Mr. Cunningham has been associated with



R. E. CUNNINGHAM

the Edison company since 1902. After serving as lineman, district foreman and special foreman, he was made superintendent of distribution in 1907, and this position he has filled for the past seventeen years.

J. W. Andree, who has been named general superintendent of production, came to the operating department in 1910. In 1911 he acted as assistant to



J. W. ANDREE

the superintendent of generation, and in 1920 was made assistant superintendent of generation. Since 1921 he has been operating engineer.

F. G. Hamilton, who has been division superintendent of distribution, has been given the title of general superintendent of distribution. Mr. Hamilton began his career with the Mount Whitney Power Company as a lineman in 1899. After an experience covering the duties of substation operator, trouble shooter, sub-district agent, power and lighting salesman, and engineer and operator on several large pumping plant installations, he was given the position of division superintendent in charge of construction and operation in the territory including Exeter, Lindsay and Porterville, Calif. Until the consolida-

tion of the Mount Whitney company with the Edison company, Mr. Hamilton held successively the positions of superintendent of distribution, purchas-



F. G. HAMILTON

ing agent, and general superintendent of the western division. After the merger he was made division superintendent of distribution.

R. B. Kellogg has been made superintendent of steam generation. He

joined the Edison company in 1923 as an assistant to the operating engineer and has had much to do with the rehabilitation and operation of various



R. B. KELLOGG

steam plants in the company's territory pressed into use by the shortage of water. Mr. Kellogg's previous experience dealt with prime movers and steam machinery.



Directing heads of the recently reorganized commercial department of the Public Service Company of Colorado. All make their headquarters in Denver, Colo. Sitting (left to right), Charles A. Semrad, general commercial manager and formerly general manager of the Western Light & Power Company, F. F. McCammon, manager of the power sales department; standing, G. B. Buck, manager of the electrical merchandising division, E. B. Ball, assistant commercial manager, and Roy G. Munroe, manager of the gas merchandising division.

Company Develops Good Will at Annual County Fair

The San Joaquin Light & Power Corporation demonstrated that there are many ways in which to give service when it again conducted a free day nursery at the Fresno, Calif., District Fair, Sept. 29 to Oct. 4. This service proved so popular last year that A. Emory Wishon, general manager, decided to repeat the nursery at the same location. The experience gathered during the 1923 fair proved valuable during the 1924 fair with the result that more children were cared for and the work done better. The exhibit and nursery covered a space of 45 x 80 ft. and consisted of a nursery for infants and children, an emergency hospital, a rest room and a miniature exhibit of water power development.

The nursery was divided into two sections,—a playground for toddlers from one to five years old, and a section for infants in arms. The playground was covered with 8 in. of clean white sand, while a teeter-totter and toys, such as balls, blocks, sand buckets, shovels and wheel barrows, kept the youngsters busy at play. Two attendants were on duty most of the time while as many as five were necessary at times. During the six days the nursery was in operation 410 children were checked into the playground. Another service rendered by the nursery was in caring for lost youngsters. These were turned over to the San Joaquin Power Free Day Nursery, relieving the officers of a burden they were not equipped to handle. As many as nine lost children were cared for in one day.

In the infants' department two trained nurses took the babies from the mothers, put them in clean comfortable cots or, if very small, in baskets, and assumed all responsibility for their care while the mothers enjoyed the many attractions at the fair. A physician in charge directed the proper care of the babies. Milk for the children was kept cool in an electric refrigerator until needed and then heated in an electric milk warmer. The department registered 117 infants during the week.

A cage of cooing ring-neck doves and

three fat puppies constituted the "menagerie." The small dogs were found to be very interesting to the youngsters. The first-aid station conducted by the company, in connection with the Day Nursery, handled 58 cases of various types of injuries, ranging from slivers in the fingers of workmen to serious bruises resulting from a motorcycle spill on the track.

A miniature mountain range, power house, transmission lines and an electric train in operation were featured in an exhibit so placed that the children might see it from the playground. The exhibit was designed and installed by Lee R. Duncan, company civil engineer, who built the mountains, railway and power house and painted them in natural colors in four days' time. Toy electric trains were used on the railway.

The San Joaquin Light & Power Corporation through the exhibit and nursery made a very favorable impression on the thousands of visitors at the fair. It is probable that the nursery will be continued next year, making this a regular good will service of the company to the people of the San Joaquin Valley.

British Columbia Towns Consider Hydro Development.—The towns of Duncan and North Cowichan, B. C., on Vancouver Island, are considering the development of a hydroelectric plant, for light and power purposes in the two towns. Large power developments are possible either on the Cowichan River, at Skutz Fally, or on the Chemainus River.

Utility Booklet Published.—Standard Gas & Electric Company has issued a 16-page illustrated booklet devoted to information dealing with the company and the public utilities that it operates. The booklet contains illustrations showing many of the power plants operated by the company's subsidiaries and in general terms defines the operating characteristics of these utilities. The progress charts, dealing with earnings, output, customers served and customer ownership sales are particularly interesting.

University Dean Addresses Spokane Engineers.—At the regular weekly luncheon of the Associated Engineers of Spokane, Wash., held Oct. 22 at the Davenport Hotel, Dean Francis M. Thomson of the School of Mines, University of Idaho, gave a constructive talk upon "The Engineer and Public Relations." The engineer's status as a member of one of the most difficult and honorable professions was defined, and the precautions that should be taken to maintain a high standard of professional ethics were emphasized.

Electric Manufacturer Celebrates Twenty-fifth Anniversary.—The Trumbull Electric Manufacturing Company on Oct. 15, celebrated the twenty-fifth anniversary of the founding of the company. To carry the message of the history of the company a special issue of Trumbull Cheer has been issued and mailed to friends of the concern. The special issue tells the story of the company's growth from 1899 to the present time and illustrates numerous early products. Company executives are also introduced.

Books and Bulletins

ELECTRIC RAILWAY PRACTICES IN 1923

As revealed in presentations made Aug. 15, 1923, to the Charles A. Coffin Foundation by nearly a score of electric railways. Edited by Henry H. Norris for the Foundation. 220 pages; 26 plates. Published by the American Electric Railway Association, New York, N. Y., 1924. \$2.

This is a summary and review in book form of the presentations of the electric railway companies made last year in competition for the Charles A. Coffin prize. This prize, one of several made by the Charles A. Coffin Foundation, which was formed in 1922 by the directors of the General Electric Company, is to be an annual award to the electric railway company which, during a given year, has made a distinguished contribution to the development of electric railway transportation.

The book is divided into two main parts. Part I, "More Riders and More Revenue," comprises the following chapters: "Better Cars Bring in More Revenue"; "Insuring High Quality of Service"; "Extending the Scope of the Service"; "Telling the Public About the Service"; "Electric Railway an Integral Part of Community." Part II, "Operation with Proper Regard for Economy," deals with "Operating Practices that Conduce to Economy"; "Economical Maintenance and Good Management"; "Electric Railway Savings in Construction"; "The Accident Menace Can Be Controlled"; "Satisfactory Relations with Employees"; "Securing Capital for Improvements." In each chapter are excerpts from the presentations of the various companies that deal with that particular subject.

Containing, as it does, data on the best practices in use in the electric railway industry at the present time, the book should be of much value to anyone interested in that subject.



A scene showing a model hydroelectric plant, transmission line and miniature electric railroad attracted the attention of children and their parents and the sand lot, shown in the inset, furnished an excellent playground at the Fresno fair.

Meetings

Commercial Section Holds First Conclave Meeting of Year

The Commercial Section of the Pacific Coast Electrical Association held a conclave meeting at Los Angeles, Calif., Oct. 17-18. Through the courtesy of the Southern California Edison Company the general meetings were held in the club rooms of that company in the Edison Building, while the various bureau and sub-committee meetings were held in offices of the company in the Byrne Building.

The first general meeting was convened at 9:30 a.m. Oct. 27. A. M. Frost, chairman of the section, presided at this and all general meetings. The local bureau chairmen were called on for a general statement of the activities of the various bureaus in order that all members of the commercial section who were present might be informed of the work to be undertaken and the results desired. Communications from the Commercial National Section were read and the recommendations of the national section chairman as to organization were outlined.

COMING EVENTS

National Association of Railway and Utilities Commissioners—

Phoenix, Ariz.
Nov. 11-14, 1924

Commercial National Section, National Electric Light Association—

Hotel Rafael, San Rafael, Calif.
Nov. 19-21, 1924

Electrical Supply Jobbers' Association—

Hotel Cleveland—Cleveland, Ohio
Nov. 19-21, 1924

The chairman of the appliance bureau, H. C. Goldrick, specialty sales manager of the Western Electric Company, Los Angeles, told of the work of his committee to date, this work embracing both organization of the committee and certain definite progress. The appliance bureau has decided to make no survey of appliances in use as this is felt to be a duplication of work already in progress by the national appliance bureau. This survey would be in effect a duplication, also, of previous surveys. The major portion of the effort of the appliance bureau for the balance of the fiscal year will be the furthering of appliance sales and the devising of ways and means for appliance sales promotion and development.

H. K. Griffin, chairman of the customers' relations bureau, reported that the bureau will devote its time this year largely to the preparation of a manual for employees, this manual to be written in general terms in order to avoid conflict with individual company policies. A letter from F. F. Kellogg, chairman of the customers relations committee, Commercial National Section, was read and in it Mr. Kellogg stated his intention of being present at

the meeting to be held at San Rafael, Nov. 19-21.

R. C. Bragg, of the Vallejo Electric Light & Power Company, chairman of the electric cooking and heating bureau, announced the appointment of O. R. Doerr, of the Great Western Power Company, Oakland, as chairman of the sub-committee on electric ranges; W. W. Hicks, manufacturer of electric heating equipment, San Francisco, as chairman of the sub-committee on electric water heating, and E. A. Wilcox, manufacturers' representative, San Francisco, as chairman of the sub-committee on electric air heating. One of the chief activities of the bureau this year will be the study of metered water heating, this geographic section probably having more metered water heaters than any other geographic division.

H. M. Crawford, sales manager of the Pacific Gas and Electric Company, San Francisco, and chairman of the lighting bureau, reported that the bureau is conducting three main activities. The home lighting contest, under the direction of V. W. Hartley, executive secretary of the California Electrical Co-operative Campaign, is already well under way; the lighting school, under the direction of Clark Baker, of the National Lamp Works, Oakland, has been temporarily postponed in order not to conflict with the home lighting contest but will be promoted as soon after the completion of this contest as is possible; and a cooperative farm lighting activity, in connection with the work of the University Farm at Davis, is now in preparation. Mr. Crawford, who attended the Chicago meeting of the Commercial National Section, reported on that meeting.

B. D. Moses, of the University Farm, Davis, spoke on the advance of agricultural engineering and told briefly of the vast field opened to the entire industry by the increased use of electricity on the farm.

H. E. Sandoval, manager of electric sales, Pacific Gas and Electric Company, San Francisco, reported on the activities of the power bureau and stated that E. G. Stahl, chairman of the sub-committee on agricultural power, would undertake a survey of present and possible uses of electricity in agriculture; that R. C. Griffin, chairman of the sub-committee on industrial heating, would promote the use of industrial heating along the same lines as the committee of last year had recommended; and that W. F. Neiman, chairman of the competitive power sub-committee, would investigate the utilization of waste heat in cement plants, laundries, sawmills and lumber companies. It was suggested by J. F. Polard, of the Coast Valleys Gas and Electric Company, that competitive power in hotels also be investigated.

The resignation of E. J. Power, chairman of the transportation bureau, was read and a resolution was unanimously adopted that the secretary express the regret of the Commercial Section at Mr. Power's leaving.

The various committees and sub-committees held meetings after the general session on Oct. 17. Luncheon was served at the Hotel Clark, under the direction of W. C. McWhinney, of the Southern California Edison Company. Committee meetings were resumed after the luncheon and continued until a late hour. The results of com-

mittee deliberation were told at the second general meeting held on Oct. 18, after which adjournment was taken until the meeting to be held in San Rafael, Nov. 19-21, at which time the Commercial Section of the Pacific Coast Electrical Association will meet with the Commercial National Section.

The total attendance at the Los Angeles meeting was sixty-seven and the meeting was marked by interested discussion. Considerable progress in committee work was made and reports are being prepared for presentation at future meetings.

Home Lighting Campaign Plans Completed in Spokane

Under a committee of the Electrical Service League of Spokane, Wash., headed by Lewis A. Lewis, president, the Better Home Lighting Campaign has been launched in that city and material for the contest is being distributed. The league has appropriated \$1,000 to defray the administrative expense of the campaign and to provide prizes in the contest. Although active cooperation of the school board has not been obtained, it is expected that there will be at least 2,500 entrants in the contest.

Besides Mr. Lewis, who is chairman, the committee consists of R. B. McElroy of The Washington Water Power Company, and secretary of the league, and Charles Dunkin, Ben Olsen and Millard Sebern.

COMING PACIFIC COAST ELECTRICAL ASSOCIATION MEETINGS

Executive Committee, Commercial Section—

Hotel Rafael, San Rafael, Calif.
Nov. 19-21, 1924

Appliance Bureau—Commercial Section—

Hotel Rafael, San Rafael, Calif.
Nov. 19-21, 1924

Customer Relations Bureau, Commercial Section—

Hotel Rafael, San Rafael, Calif.
Nov. 19-21, 1924

Electric Cooking and Heating Bureau, Commercial Section—

Hotel Rafael, San Rafael, Calif.
Nov. 19-21, 1924

Lighting Bureau, Commercial Section—

Hotel Rafael, San Rafael, Calif.
Nov. 19-21, 1924

Power Bureau, Commercial Section—

Hotel Rafael, San Rafael, Calif.
Nov. 19-21, 1924

Transportation Bureau—Commercial Section—

Hotel Rafael, San Rafael, Calif.
Nov. 19-21, 1924

Purchasing and Stores Section—

Del Monte, Calif.
Nov. 20-21, 1924

Executive Committee —

Los Angeles, Calif.
Nov. 13, 1924

Walter E. Jones, of the Economy Fuse Company, Seattle, Wash., attended the recent meeting of the Pacific Coast Electrical Supply Jobbers' Association at Del Monte, Calif.

P.C.E.A. Executive Committee to Meet in Los Angeles.—The executive committee of the P.C.E.A. will hold a meeting in Los Angeles, Calif., Nov. 13, 1924.

Manufacturer, Dealer and Jobber Activities

Mica Insulator Company, New York, N. Y., has published a new booklet entitled "Commutator Insulation and Assembly." The booklet contains a description of the processes involved in the manufacture of Micanite and also shows the adaptability of this insulator to commutator construction.

W. A. Jones Foundry & Machine Company, Chicago, Ill., has published Catalog No. 29 which is entitled "Jones Gears." The catalog contains dimensions, descriptions and illustrations and tabulated data on the full line of gears manufactured by the company and is especially designed for use by engineers, purchasing agents and plant superintendents. The catalog contains listing of gears made from cast iron, cast steel, forgings, rawhide and Bakelite. The catalog will be sent by the manufacturer to anyone requesting it.

Ingersoll Company, Chicago, Ill., has recently patented and is now manufacturing a new electrical humidifier that is a combination fountain and electric fixture. The humidifier is designed to be either placed on the table or in a combination willow fernery that has been designed by the company. The device is so designed that small sprays of water are projected into the air and because of colored light placed under a center bowl, the sprays of water are in turn colored. A small electric motor in the base of the device circulates the water in the system, using the same water over and over.

Electric Machinery Manufacturing Company, Minneapolis, Minn., has published Bulletin No. 854 which is devoted to the company's line of synchronous motors for compressors. The bulletin contains many illustrations showing installations of the company's motors in industrial plants and presents considerable editorial matter showing the suitability of synchronous motors to this type of work. The company has also prepared Bulletin No. 785 containing a listing of some of the users of the company's line of synchronous motors and vertical alternators.

The Cooper Electric Company, 244 Washington Street, Portland, Ore., after seven years service to the public in this location, will soon move its store to 112 Third Street. The new location has a large basement for stock room and work shop, while the floor on the street level will be devoted to show room and office.

Allis-Chalmers Manufacturing Company, Milwaukee, Wis., has prepared for distribution Bulletin No. 1540 which is devoted to the Allis-Chalmers line of compressors or blowing engines. The bulletin contains descriptions and illustrations of the company's line of compressors that may be driven either by electric motor, steam engine or gas engine.

Stewart Electric Company, jobber and distributor of electrical supplies, with headquarters at 560 South San Pedro Street, Los Angeles, Calif., has opened a branch house at 340 Third Street, San Bernardino.

The Sebring Electric & Radio Shop, formerly at Church and Neal Streets, Grass Valley, Calif., has moved to new quarters at 141 Mill Street, that city. The new location adjoins the offices of the Pacific Gas and Electric Company and will permit display and stock of household appliances. In addition to electrical merchandising the firm will continue to do a general wiring and mine installation business.

The Cutler-Hammer Manufacturing Company, Milwaukee, Wis., is distributing an attractive four-page pamphlet which illustrates the new C-H No. 7053 combination pendent switch and receptacle. This device is arranged to control the lighting unit and at the same time take any appliance, the two features being independent of each other. The receptacle is directly connected so that whether the light switch is off or on any appliance may be plugged in and operated. The device is adapted for use with kitchen lighting units as well as for controlling commercial and industrial lighting units.



"It's a pipe!" said James H. McGraw, Jr., vice-president in charge of electrical publications of the McGraw-Hill Company, Inc., as he tucked his 75-in. altitude in a section of the 129-in. penstock being installed on the Pit 3 development of the Pacific Gas and Electric Company.

The Hamm-Smith Company, composed of H. H. Hamm and P. Smith, formerly located at 5136 Tenth Avenue, Los Angeles, Calif., has moved to 1003 South Hill Street in that city. The firm is engaged in electrical contracting.

Fred S. Bemborough, Pacific Coast representative of the Master-Lite Company, formerly of 223 West Second Street, Los Angeles, Calif., has moved to 1003 South Hill Street, where he will occupy quarters jointly with the Hamm-Smith Company.

A. C. Smith, formerly sales manager of the Modern Household Sales Company, Canton, Ohio, has opened sales office and display rooms at 644 Third Street, San Bernardino, Calif., where he will handle the Easy washing machine.

J. B. Sunny, electrical contractor and dealer, formerly of Canon City, Colo., has opened an electrical shop at 209 West First Street, Colton, Calif. In addition to handling general and industrial wiring, he will stock a complete line of fixtures and appliances.

The Delta-Star Electric Company, Chicago, Ill., has opened an office in Albany, N. Y., and has placed Henry A. J. Castor in charge. This office is in conjunction with those at Rochester, Syracuse and Buffalo under the general charge of the Schiefer Electric Company.

The Bryant Electric Company, of Bridgeport, Conn., has issued a 206-page catalog on its wiring devices. There are two indexes, a catalog number index and price list and a general index. The prices listed in the catalog supersede all previously quoted prices.

The Lionel Corporation, New York City, N. Y., has issued a catalog of its toy electric trains. It is well illustrated with colored reproductions of various models.

The Industrial Products Company, Philadelphia, Pa., has issued a bulletin on its C. & E. Universal safety handle for extension cords and drop lights. The folder lists the advantages of the device, which is made of insulating rubber, and gives instructions for installing.

The Century Electric Company, St. Louis, Mo., has published Bulletin No. 35 covering its squirrel cage induction polyphase motors, 1/6 to 75 hp., type "SC," with illustrations of models and motor parts.

The Graham-Reynolds Electric Company, Los Angeles, Calif., has recently announced the opening of a radio department. Day-Fan receivers, Kilbourne-Clarke loud speakers, and a comprehensive line of kits and parts, including Manhattan dry batteries and Eveready B batteries, will be handled. The department will be in charge of C. W. Arthur, who has recently joined the organization.

The Illinois Electric Company, Los Angeles, Calif., has recently been appointed jobber for Westinghouse lamps.

The L. C. Warner Company, distributor of Savage washing machines in Seattle, Wash., and Portland, Ore., has recently opened an office at 231 Rialto Building, San Francisco, with J. W. Condon, Jr., in charge.

The Hermosa Electric Company, Hermosa Beach, Calif., has been purchased by J. L. Bisher & Son, who have reorganized it under the name of California Electrical Company.

The Square D Company, Detroit, Mich., manufacturers of Square D safety switches, has announced a new type of voltage tester which does not require the use of lamps. This new type voltage tester will indicate whether the current is a.c. or d.c. and will indicate the voltage up to 600 volts.

The Ohio Electric & Controller Company, Cleveland, Ohio, has announced the appointment of G. R. Horne as district sales manager of the magnet department, Detroit, Mich.

The Kehoe Company, Toledo, Ohio, has introduced a new electric dishwasher which utilizes the centrifugal force principle. The water within the dishwasher moves at a speed of approximately 700 ft. per min. and is deflected into the dish container at three points.

The Crouse-Hinds Company, Syracuse, N. Y., has recently issued Folder No. 17 descriptive of Arktite circuit-breaking plugs and receptacles. The folder is fully illustrated and also shows photographic reproductions of the devices in actual use.

Personals

William P. Southard, general manager of the Trinidad Electric Transmission Railway & Gas Company, Trinidad, Colo., was elected president of the Colorado Public Service Association at the recent convention at Glenwood Springs, Colo. Although serving as



WILLIAM P. SOUTHARD

first vice-president the term of which would continue until July 1, 1925, owing to the resignation and departure of Ben S. Read, Mr. Southard immediately became the acting president of the association. He has been identified with the utility industry for over twenty years during which time he has been connected with electric, gas, water, and street railway properties. Since 1911 he has been with the Federal Light & Traction Company as manager of that company's subsidiaries in Las Vegas and Albuquerque, N. M., and in his present capacity at Trinidad, Colo. He is a Shriner and a Rotarian.

A. W. Leonard, president, and J. B. Howe, counsel, of the Puget Sound Power & Light Company, Seattle, Wash., who were called to Minneapolis, Minn., on a business trip recently, made a record for speed. Leaving Seattle the night of Sept. 6, they arrived in Minneapolis at 7:30 a.m. the morning of the 9th. At 11:15 the same morning they were on the train headed back to Seattle, which they reached at 7 p.m. Sept. 11.

J. D. Nicholson, who has for several years been manager of the electrical department of the Mine & Smelter Supply Company in Salt Lake City, Utah, has been transferred to the main office of the company in Denver, Colo., to become assistant to the manager.

E. V. More, vice-president of the Federal Electric Company, Oakland, Calif., and George H. Erich, Northwest manager of that company, Seattle, Wash., were recent Los Angeles, Calif., visitors.

C. H. Melsome Smith, formerly of Auckland, N. Z., has joined the sales force of C. F. Henderson, San Francisco, Calif., representative of the Electric Controller & Manufacturing Company, Cleveland, Ohio.

W. D. Bartlett, chief operator of Porterville No. 2 substation of the Southern California Edison Company, has been promoted to be chief operator of the Venida substation.

D. W. Hargett, of the Delano substation of the Southern California Edison Company, has been made chief operator of the Porterville No. 2 substation of that company.

C. H. Tallant, for the past several years connected with the advertising departments of large San Francisco, Calif., concerns, has opened an advertising agency under his own name at 510 Rialto Building, San Francisco.

B. E. Van Vleet, traveling auditor from the Boston, Mass., offices of Stone & Webster, Inc., returned to Seattle, Wash., in August to remain about a year auditing the Puget Sound Power & Light Company.

E. B. Criddle, new business manager of the Southern Sierras Power Company, Riverside, Calif., was a recent visitor to San Francisco.

D. N. King, real estate and insurance agent of the Puget Sound Power & Light Company, Seattle, Wash., recently returned from a month's trip East which took him to Montreal, Que., Boston, Mass., and New York City, returning to the Coast via southern California.

A. D. Page, sales manager, and G. C. Osborn, assistant sales manager, both of the Edison Lamp Works, Harrison, N. J., were visitors in Denver, Colo., Oct. 20.

H. H. Allison, manager of the lighting department of the Electric Appliance Company, San Francisco, Calif., attended the meeting of the Lighting Bureau of the Pacific Coast Electrical Association held at Los Angeles, Oct. 17-18.

D. N. King, of the Puget Sound Power & Light Company, Seattle, Wash., was recently in San Francisco, Calif.

A. Emory Wishon, vice-president and general manager of the San Joaquin Light & Power Corporation, Fresno, Calif., was recently in San Francisco on business for his company.

P. H. Booth, Pacific Coast sales manager of the Edison Electric Appliance Company, Los Angeles, Calif., recently spent some time in San Francisco on business for his company.

R. B. Childs, of The Washington Water Power Company, Spokane, Wash., visited the Coeur d'Alene mining district during the week of Oct. 13, on a general business trip.

Frank C. Yerkes, superintendent of the electric meter department of the Public Service Company of Colorado, Denver, Colo., has been appointed manager of the northeastern district of the company with headquarters at Sterling, Colo. He succeeds H. A. Mills who has been transferred to the main office in Denver.

R. S. Willoughby, proprietor of the Silver State Electrical Company and veteran Denver, Colo., contractor, is visiting in the East. After attending the Association of Electragists, International, convention at West Baden, Ind., he went to New York City.

W. H. McGrath, vice-president of the Puget Sound Power & Light Company, Seattle, Wash., recently returned from a trip to Houghton, Mich., Boston and New York. He was accompanied by Mrs. McGrath.

J. C. Gaylord, of the engineering department of the Southern California Edison Company, Los Angeles, Calif., is on an extended trip to Eastern cities. Mr. Gaylord will attend the N.E.L.A. meeting to be held at St. Louis, Mo., and will visit Pittsburgh, Pa., Schenectady, N. Y., and other leading manufacturing centers.

D. L. Huntington, for the past fourteen years president of The Washington Water Power Company, Spokane, Wash., recently was the guest of honor at a surprise dinner given by officials and department heads to celebrate the thirtieth anniversary of his connection with that company. An additional surprise was the presentation of an engraved gold watch to Mr. Huntington, accompanied by a scroll extending the greetings of those present at the dinner. Mr. Huntington entered the service of The Washington Water Power Company in 1894 in the capacity of treasurer. He was made general manager in 1896, later vice-president and general manager, and president in 1910. When he first became connected with the company, its lines went only to the suburbs of Spokane. Now they extend in all directions, covering a considerable portion of northern Idaho and the greater part of eastern Washington. Mr. Huntington was educated in the public schools of Washington, D. C. He attended Yale University, specializing in mechanical engineering, and was graduated in 1891 with a Ph.B. degree. He entered the employ of the Thomson-Houston Electric Company, at Lynn, Mass., and upon the organization of the General Electric Company was sent to the Philadelphia district where he did all kinds of work from the selling of appliances to the building of pole lines and power plants. He resigned in 1894 to become affiliated with The Washington Water Power Company. As a student of public relations, Mr. Huntington has especially interested himself in this phase of the work of the North-



D. L. HUNTINGTON

west Electric Light and Power Association, of which he is past president. He is a fellow of the American Institute of Electrical Engineers and a member of the Yale Engineering Society. In 1916 an honorary degree of master of sciences in engineering was conferred upon him by the Washington State College. He was born in New London, Conn., in 1870.

H. H. Schoolfield, chief engineer of the Pacific Power & Light Company, Portland, Ore., attended the meetings of the Technical National Section of the National Electric Light Association held at St. Louis, Mo.

Harry Byrne, manager of the North Coast Electric Company, Seattle, Wash., attended the recent meeting of the Pacific Coast Electrical Supply Jobbers' Association at Del Monte, Calif.

R. G. Gentry, head of the public relations department of the Public Service Company of Colorado, Denver, Colo., and vice-chairman of the Electrical Co-operative League of Denver, was recently elected president of the Lions' Club in that city. **Dean D. Clark**, Denver commercial manager of the Mountain States Telephone & Telegraph Company and treasurer of the League, was elected a member of the board of directors.

Harris J. Ryan, professor of electrical engineering at Stanford University, Palo Alto, Calif., past president of the American Institute of Electrical Engineers, was presented with a beautiful etching at the convention of the Institute held at Pasadena, Oct. 13-17. The gift was a token of appreciation of the services of Prof. Ryan to the engineering profession in general and to the Institute in particular, and of the esteem and love of his friends and co-workers. Prof. Ryan graduated from Cornell University with a degree in electrical engineering and has given his entire life to the furtherance of electrical development. His laboratory at Palo Alto, Calif., has been the scene of many noted experiments and has produced a large number of important high tension engineering studies. Many of these studies have resulted in progress in transmission practice. His work on corona has been of particular note and has contributed largely to the knowledge of high voltage transmission and distribution. Prof. Ryan has filled numerous government advisory positions and has been active in consulting

J. L. Stannard, chief engineer of the Lake Cushman power project under development by the City of Tacoma, Wash., recently discussed the project before the Engineers' Club of Seattle. His talk was accompanied by illustrative views of the Cushman development to date.

Harry B. Sewall, manager of the Puget Sound Power & Light Company, Bellingham, Wash., recently left for Boston, Mass., where he attended the annual managers' meeting of the Stone & Webster companies, which opened Sept. 29 and continued for a week. Before returning, Mr. Sewall attended the convention of railway men in Atlantic City.

Herbert A. Cram, California representative of Landers, Frary & Clark, New Britain, Conn., attended various meetings of the Pacific Coast Electrical Association held at Los Angeles, Oct. 17-18.

Ben Williams, from the auditing department of the Boston, Mass., offices of Stone & Webster, Inc., has recently arrived in Seattle, Wash., to remain permanently in charge of the auditing branch of the Puget Sound Power & Light Company.

Clare N. Stannard, vice-president and general manager of the Public Service Company of Colorado, Denver, Colo., accompanied by **Guy W. Fallor**, assistant vice-president, and **John E. Loiseau**, secretary of the company, early in October made a motor trip of inspection of the properties acquired from the Colorado Power Company in the western part of the state. Mr. Stannard later made a business trip to Salt Lake City, Utah.

G. L. Hall, a member of the Yakima, Wash., organization of the Pacific Power & Light Company since 1915, has been promoted to be chief clerk at Yakima, taking the place of **L. R. Sheeley**, resigned.

L. M. Klauber, general superintendent, San Diego Consolidated Gas & Electric Company, attended the convention of the American Institute of Electrical Engineers in Pasadena, Calif., Oct. 14-15, and took part in the discussions. He related the experience of his company in the cleaning of insulators on high tension lines by means of compressed air and water, a method worked out by Mr. Klauber, **K. B. Ayres**, superintendent of electric distribution, and others of the company.

F. F. McCammon, head of the power sales department of the Public Service Company of Colorado, Denver, Colo., represented **Clare N. Stannard**, vice-president and general manager of the company, on the radio program of "electrical night" in Denver, Oct. 21, at which time a talk prepared by Mr. Stannard on the national home lighting essay contest was presented.

John B. Fisk, consulting engineer of The Washington Water Power Company, Spokane, Wash., attended the meetings of the Technical National Section of the National Electric Light Association held at St. Louis, Mo.

Ray L. Stout, since 1910 assistant in the property and tax department of the Pacific Power & Light Company, Portland, Ore., has been promoted to take charge of this department with the title of assistant engineer. This promotion followed the retirement from active service of **William H. Galvani**, formerly head of the department.

C. Preston Hering, electrical and industrial engineer, formerly with the Great Western Power Company, San Francisco, Calif., has been appointed organization secretary of the San Diego, Calif., Chamber of Commerce. Mr. Hering has had an extensive career in electrical engineering, shipbuilding and sales engineering, both in this country and the Orient. He will, in his new work, make a study of San Diego with the view of later assisting in the development of that community along industrial lines. Mr. Hering was educated at Eastern universities and



C. PRESTON HERING

later spent some time in Europe. He installed the first automatic telephone system in the East, at Wilmington, Del., and was subsequently active in electrical utility fields. Shortly after the Spanish-American war he was sent as civilian engineer to electrify the navy yard in the Philippine Islands. He left this work to join the staff of the General Electric Company and, later, the Siemens interests, promoting and installing electric light plants in China and India. He next became interested in exporting and left this field to become an officer in the Signal Corps of the American army during the World War. He was shortly transferred to the Southwest Shipbuilding Company as electrical superintendent. From this position he joined the force of the Great Western Power Company as industrial engineer in charge of the sales force. Prior to leaving San Francisco Mr. Hering was president of the Electric Transportation Association, which organization is active in the promotion of the use of electric trucks and tractors.

W. T. Ryan, industrial engineer of The Washington Water Power Company, Spokane, Wash., spent the first half of October in Oregon, investigating certain phases of the lumber industry that might be of interest in the Inland Empire. On this trip he visited Portland, Albany, Cottage Grove, the Coos Bay district, Medford and Klamath Falls, and was impressed particularly with the character of the mechanical and electrical equipment of the newer sawmills and planing mills.

Frank Dabney, manager of the Puget Sound Securities Company, Seattle, Wash., left on Sept. 15 for a trip to Boston, Mass., and New York City, returning by way of the Grand Canyon and California.



HARRIS J. RYAN

work. He has been consulting engineer of the Los Angeles Aqueduct; director of Supersonics War Laboratory, National Research Council; member of the jury of the Panama-Pacific International Exposition and U. S. Government delegate to the International Electric Congress. He is the author of texts and is a member of many of the leading engineering and scientific societies.

Trade Outlook

San Francisco

In the electrical industry radio business is at its peak, and this year's volume is expected to exceed greatly that of 1923. In the wholesale end the volume of buying is quite satisfactory for this time of year and shows a marked improvement over the preceding sixty days. Collections are fair to good. In the contracting field no big contracts have been awarded. An item of interest is the fact that the California State Association of Electrical Contractors and Dealers has affiliated in a body with the Association of Electragists, International. There is a possibility that recent events in the matter of financing time contracts on appliances in the Bay region may react unfavorably upon such business. Taken as a whole, the prevailing opinion seems to be that present conditions warrant a continuation of prosperity for the next four years.

In other lines of business reports are favorable. Seasonable merchandise, such as overcoats and rubber goods, is moving well, and shoe stores report good business. The recent Modern Homes Exposition served to stimulate interest in house furnishings and new equipment, and the fourth annual California Industries Exposition, just held, is expected to have beneficial results in many lines. Building is active, and the fruit pack, dried and canned, is moving well. An encouraging sign of improvement in the general business situation is the fact that the number of failures has decreased steadily during recent months.

Portland

Lumber production at the present time is at low ebb, with new business below production. It is expected that some relief will come from railroad purchases. The general feeling among lumbermen is that business will continue dull until after election.

There has lately been a heavy demand for wheat for shipment to Europe and Japan, a single cargo of 354,664 bushels bound for Europe being valued at \$522,000. Exports of wheat during September, 1924, were approximately nine million bushels over those of September, 1923.

Building is active, showing a 7 per cent gain over September, 1923. The weather continues mild, and the light rains have failed to cause any serious interruption in construction.

All indications point to a good foreign demand for apples. Sales are better than a year ago with prices well sustained. A considerable part of the shipments will be in refrigerated space.

Increase in retail sales in general is reported, and the buying power of the farmer is reported as ten to twenty-five per cent greater than it was a year ago.

Salt Lake City

Business conditions in Salt Lake City and the adjacent Intermountain territory have shown some improvement during the past few weeks, with a decided improvement being noted in cer-

tain lines of activity. Railroad car loadings as a whole have increased.

Agricultural conditions have shown a betterment through increase in prices that has offset to a certain extent production shortage caused by the summer drouth.

Retail trade has shown a marked improvement during the past month, as evidenced by reports from several of the leading merchants.

The copper mining industry is now upon a more substantial basis than it has been for some time, and the future outlook is exceedingly bright, according to a recent statement of the managing director of a prominent copper mining company.

Electrical appliances are moving fairly well. Jobbers report a continued upward trend in business. Collections have shown some improvement during the past month.

Spokane

Mining conditions in British Columbia, northeastern Washington and in northern Idaho continue excellent. In the latter district, which is served by The Washington Water Power Company, the power consumption for September showed an increase of approximately 35 per cent over that of September, 1923. This is a rough measure of the increased activity.

Packing plants, cold storage and refrigerating plants, and plants devoted to food products are working at a good output, generally a little better than a year ago. The woodworking plants are keeping up a fair output, though production is limited by poor prices in Eastern markets and orders have to be persistently solicited. The box business is below normal.

Wheat is moving easily at good prices so that towns in the wheat districts are enjoying an increase in retail trade. The fruit crop in the Spokane Valley is much below normal in volume and many of the grocers are facing heavy losses on account of poor quality as well.

Bank clearings for Spokane during September showed an increase of 10 per cent over those for August, and were slightly larger than those for September, 1923. There is a good demand for sound securities.

Los Angeles

The sale of electrical appliances has picked up considerably in this territory. This includes both household appliances and major devices. Wholesale electrical supplies are on a firm basis. The sale of radio apparatus continues active, with every indication of continuance. The removal of the home-lighting restrictions imposed on account of the power shortage has reacted to advantage upon both wholesale and retail branches of the industry.

Manufacturers and sellers of holiday goods, millinery and seasonable women's wear report good business, as do department stores and other retail establishments. Collections are somewhat slow, due in part, it is believed, to the

policy of leniency that has been more or less the custom.

Sales volume of agricultural implements is about on a par with that of last year. There seems to be a better movement in farm machinery than in the general implement line, particularly in regard to tractors. Prices remain about the same.

Building permits showed a slight decrease for the first fifteen days of October, as compared with the corresponding period of 1923. There is, however, much construction activity. There is plenty of labor available for all lines of work.

Seattle

With the exception of sales of domestic appliances, including toasters, percolators, irons and ranges, which are conceded to be above normal, electrical jobbers report that sales are about normal. The electric heater movement, which has not been active, is considered problematical, although considerable advertising is being done. Lamp business is still on the increase, with the peak apparently some distance away. A four-cent decrease in rubber-covered wire, two cents more than originally predicted, is reported in Seattle. Stocks in all lines are in good shape, with collections from fair to good, ranging from thirty to sixty days. Farm lighting outfits have not moved as anticipated, although considerable campaigning has been done in this line.

Seattle lumber mills have increased production to a point beyond the maximum attained at any time during the past ninety days. New business has declined below output, but men of the lumber industry are optimistic over the outlook for the winter months.

Building activities have been unusually stimulated by the issuance of several large permits. Home construction continues in the lead. Reports from other Puget Sound cities indicate that construction is generally active throughout the territory.

Denver

For the third successive year, the record of building permits issued in this city has been broken, the grand total for the present year already exceeding the record-breaking mark established in 1923. Permits for September totaled \$3,002,150, the second highest month for the year, and brought the total for nine months up to \$21,100,050.

This has had a definite effect on the labor situation both with craftsmen and building material plant personnel. Municipal improvements are requiring a constant supply of common labor. Employment also continues to be afforded on street railway repairs and new construction. Favorable conditions promise to continue for at least sixty days.

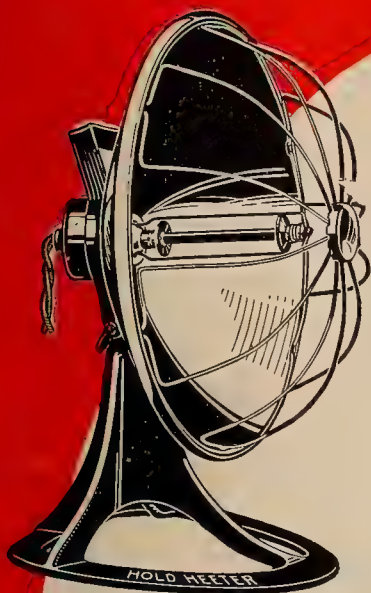
Bank clearings in Denver continue to exceed those of past years in spite of certain downward tendencies in business. Total clearings for the summer amounted to nearly a half billion dollars. The last government report shows the largest bank deposits ever recorded here.

Conservatism still exists in retail purchasing. Men's furnishing stores are the principal ones affected.

Electric appliance sales are not increasing in the expected volume. Radio is picking up splendidly. All electric jobbing houses report satisfactory sales.

Journal of Electricity

Devoted to the Economic Production and Commercial Application of Electricity
IN THE ELEVEN WESTERN STATES



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Devoted to the Economic Production and Commercial Application of Electricity

IN THE ELEVEN WESTERN STATES

A McGraw-Hill Publication

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Good Times Are Here

THE presidential election resulted as industry hoped. The Water and Power Act met its second defeat at the hands of California voters. In Washington, the Bone Bill was rejected by a substantial margin. Jupiter Pluvius has relented, and after a year of drought Pacific Coast states are rain-soaked, streams running full and reservoirs restored to normal capacity. All of which, expressed in the words of the street, means that the electrical industry in the Western states is "sitting pretty."

As a further comforting thought Christmas is approaching, and the buying public, with full purses, will be out in force. Contractor-dealers, central stations that merchandise, jobbers and manufacturers are in a position to sell more appliances than ever before.

With business conditions so generally satisfactory, with the additional advantage of the advent of the Christmas season, there is no reason why all branches of the electrical industry, and particularly those engaged in merchandising, should not substantially benefit. But it must not be forgotten that rarely does merchandise sell itself. In order to catch the shopper's eye, an article must be attractively displayed; its advantages must be clearly explained or demonstrated before it can be sold. So don't take it for granted that, because prosperity seems inevitable, further effort is unnecessary. Help it along. Make your windows so attractive that the discouraged Christmas shopper of masculine persuasion finds his problem solved as he surveys the display. Arrange your stock so that it catches the eye of the weary feminine buyer who is looking for suitable gifts, and make the slogan, "Give Something Electrical," really mean something.

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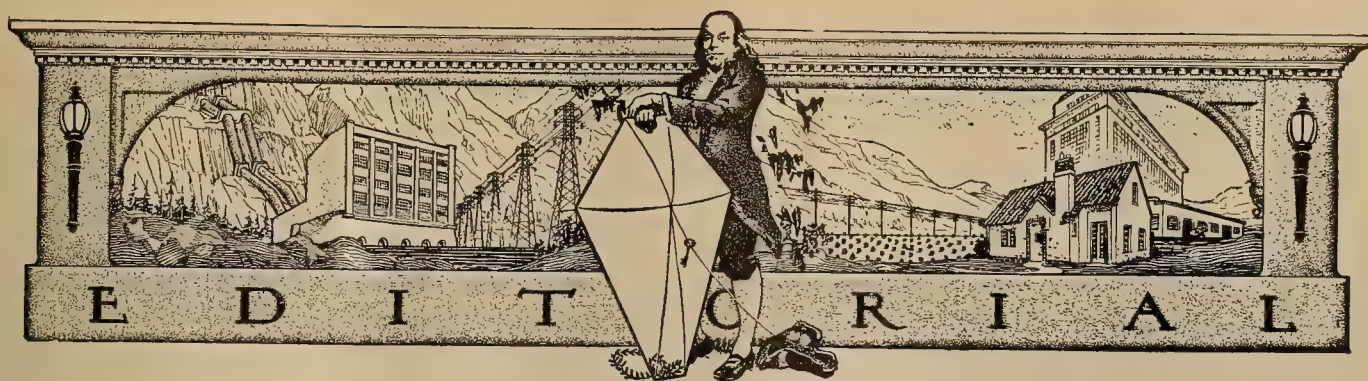
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Bone Bill Meets Same Fate as Other Radical Measures

INITIATIVE measure No. 52 in the State of Washington, the so-called Bone Bill, has been defeated. A tabulation of the returns on another page of this issue shows that a majority against it reached sixty-six thousand and that the negative vote was one and a half times that cast in its favor. Three counties only returned affirmative majorities and these were negligible in effect. The bill failed even in the home counties of Seattle and Tacoma, King and Pierce respectively, which were expected to pass it against the combined protests of the other thirty-seven; and this may indicate that even in the hotbeds of municipal-ownership experimentation, public approval of municipally owned systems is only half-hearted.

J. D. Ross, superintendent of the city light department of Seattle and chairman of the committees that managed the campaign for the bill said, "It was beaten in the avalanche of noes on all state initiative and referendum measures." Others ascribe its defeat to the country-wide repudiation of radicalism, while still others hold that the people simply rejected a pernicious measure. Whatever the opinion seems to be, it is certain that the bill did not lack publicity, both for and against, over the entire state, and certain it seems that the people of Washington are not ready to turn the utilities over to the Seattle and Tacoma municipal-ownership proponents to manage. The proponents of state ownership in Washington will not be able to laugh off the twenty-two per cent majority against their pet.

Barnum Was Not Always Right

AGAIN the California Water and Power Act has been rejected by the voters. At present writing, final figures are not available, but it is indicated by results tabulated thus far that the Act has been defeated by about the same majority as in 1922, namely two and one-half to one. There was a marked difference in the campaign waged against the Act this year as compared to that of 1922. Then for eight months or more before election the battle was carried on at almost fever heat. The very audacity of the proposal shocked and alarmed thinking people not merely in California but all over the United States. The intensive campaign of attempting to inform a million and a half or more voters brought about the

defeat of the Act by a majority of some 350,000 votes.

The 1924 campaign, however, was quite different. The case for the power companies was submitted to the voters in a quiet, unostentatious way. There was little attempt at public speaking or at the organization of meetings to protest against the Act; nevertheless apparently the Act was beaten quite as badly this year as two years ago. It is undoubtedly true that in the comparatively short time of two years between attempts the impression made by the first campaign still lingered in the minds of the voters. It fell to the lot of the electrical industry to reconstruct an intelligent interest in the minds of the voters upon the basis of the impression that was still there. At first thought, it would seem that the great expenditure in time and nervous energy in combating this socialistic attack upon our industrial structure must be entirely an economic waste, yet we do not believe that this is altogether so. An attack of this kind helps to develop weaknesses in the existing structure whether of service, public relations or any of the problems that beset the power companies. To develop a weakness is automatically to open a way to devise ways and means for its correction. We venture to state that, in our opinion, as a result of the two campaigns to socialize the generation and application of electrical energy, the power companies in California today are in a stronger position, are more firmly intrenched in the hearts and minds of the people they serve than ever before.

Barnum said that the people like to be fooled. President Coolidge said that in a country like ours, governed by the people, the majority, when given an opportunity to express itself intelligently on any public question, is always right. We are inclined to accept the viewpoint of the President.

Outcome of Election Assures Prosperity

OUR bogie man seems to have been stuffed with straw. Robert M. La Follette, the sword of Damocles that has been hanging over the head of our most cherished institutions, has gone down to defeat in spite of the three-cornered fight, in spite of the combination of every element of unrest, discontent, prejudice and class hatred. President Coolidge has been elected to the highest office in the land by a majority, both popular and electoral, that almost establishes a record in the annals of American na-

tional politics. It is more than a mere coincidence that this fact should be accompanied by a statement that there was an outpouring of voters in a percentage of the total registration that we believe never before has been exceeded in any national election. The shrewd politician knows that there is a certain class of voter that always votes; there is another class of voter—the so-called “intelligent class” (save the mark!)—that is dangerously, almost criminally, apathetic, when it comes right down to the exercise of the franchise rights of the American citizen. It seems that it is this class that was aroused to a sense of its duty to its country, an encouraging sign of an awakened sense of civic duty.

Another interesting phase of the landslide for the Republican candidate was the utter failure of the labor leaders to deliver the votes of their membership en masse to the socialist candidate. It seems quite evident that, regardless of any social or industrial association affiliations, the American citizen is more than prone to vote as an individual; even more, he is inclined to resent being delivered on a wholesale plan to any candidate without his personal consent.

At any rate, the immediate effect of the election has already justified predictions freely made that it would strengthen our business and industrial relations both at home and abroad. We can see no pitfalls ahead for the execution of a development program for the United States never exceeded in the history of our country. With the refinancing of Europe practically an accomplished fact through the genius of the Dawes Reparation Plan; with the type of national government that we may expect settled conclusively for at least four years to come; with the defeat in California and Washington of the iniquitous California Water and Power Act and the Bone Bill, and with the prospect of a copious rainfall this winter, we can see no reason why every integral branch of the electrical industry should not breathe a sigh of relief, take off its coat, roll up its sleeves and go to work.

Rains Bring End to Power Shortage

REPORTS from all sections of the Pacific Coast that have suffered from the drought during the summer and fall indicate that the rains during the early part of this month have restored conditions to normal. Stream flow has been increased materially, reservoirs are filling up, and considerable snow has fallen in the higher mountains. According to weather bureau reports, the seasonal rainfall to date (Nov. 12) in California is greater than for any similar period in 75 years.

The specter of an acute power shortage which has worried the utilities in southern California for months has been dispelled. Antiquated steam plants which were pressed into service at considerable expense have been shut down. In sections where there has been curtailment of power usage, restrictions have been removed.

The California utilities are to be complimented for the fine spirit of cooperation shown throughout the shortage. By means of interconnection large

blocks of power were exchanged. The splendid attitude assumed by consumers and by civic bodies in sections where curtailment was necessary was also gratifying. While the situation which arose is to be regretted, and the experience was costly as far as some utilities were concerned, we feel certain in predicting that there will not be another shortage.

Make This an Electrical Christmas

THE approach of the Christmas season with its attendant gift-giving opens another opportunity for contractor-dealers. There are almost countless houses that may be made into homes by the simple expedient of adding an outlet, or two, or three, where they will provide additional comfort and convenience and where they will make possible the use of some electric appliance not now enjoyed. It is an easy matter for the enterprising contractor-dealer to sell this idea to the masculine member of the family and also to see that some new appliance goes into the home. Electric appliances offer an unusually happy solution to the perennial question of what to give for Christmas, and they present an especial appeal to men, who readily recognize their service and labor-saving qualities. Contractor-dealers who are on their toes will take advantage of this Christmas season to increase their wiring and appliance business.

The Danger of the Absentee Landlord

AN interesting example of financial legerdemain is what is known as the holding company. For the benefit of the uninitiated it might be explained that the holding company is formed for the purpose of controlling a majority through the agency of a minority. To elucidate further, a holding company capitalized at \$51 could conceivably control and own fifty-one per cent of a company capitalized at \$100. To pursue this line of thought further, a man or a group of men who own fifty-one per cent of the holding company could in turn control absolutely the operations of the \$100-company, although they themselves actually represented but twenty-five per cent of the money invested in that company.

Conceivably, in theory at least, there awaits an opportunity for some genius of the Ponzi order to devise ways and means whereby through an investment of \$5 or so through the agency of an infinite number of holding companies, each superimposed upon the other, he might control the United States Steel Corporation or the Standard Oil Company. The electrical engineer's development of remote control certainly is mere a-b-c compared to the financial wizard who devised the holding company. Again, does the holding company do any constructive good? We believe not. On the contrary, from the standpoint of the public and of industry in general, we can see in the holding company little, other than a bad example of absentee landlordism, with an absence of direct responsibility and accountability to those whom the corporation serves, plus a pyramiding of capital through the superimposition of the holding

company or companies upon the original enterprise, which presumably actually renders the service that produces the earnings.

If the Western states, or if California or Washington, for instance, in the crisis that ended so happily on Nov. 4 last had been in the position of having all its power resources controlled by holding companies far away from the scene of battle, they would not have been able to present to the enemy the united front displayed by power companies during the recent campaign. It is a great advantage to the people in these states, if they could only realize it, that those men entrusted with responsibility for the administration of these properties are guided solely by their desire to develop them to their utmost in terms of service to the consumer, and that the operation of the property purely in the interest of monetary return is utterly foreign to their scheme of things.

California Seems to Have

Caught an Expensive Fish

THE story of the fisherman who spent \$100 for tackle, \$200 for a two weeks' vacation, caught one little fish, fell in the river, contracted pneumonia and paid out \$250 more in hospital and doctor bills has a curious analogy in California. That state has just lost or spent several millions of dollars for an indeterminate number of fish by the passage of initiative measure No. 11 which prevents for all time the development of hydroelectric power on the Klamath River from the mouth of the Shasta River to the sea. The power resources which have thus been rendered useless aggregate 500,000 hp. and include the 100,000-kw. development of the Electro-Metals Company of San Francisco, plans for which have progressed to the point where the Federal Power Commission had already issued a conditional preliminary permit.

The measure was initiated by the California Fish and Game Commission and others, and in securing its passage a sentimental appeal to fishermen and sportsmen of the state was made. The plea that the Klamath River was the last spawning ground of the salmon and one of the few remaining "fisherman's paradises" in the state met with ready response despite the efforts of the Eureka Chamber of Commerce and others to insure the future industrial growth of a comparatively undeveloped section rich in natural resources by securing an ample supply of cheap hydroelectric power.

The Electro-Metals Company's preliminary permit was voted by the Federal Power Commission only on the condition that a license, if granted, should require the licensee to construct fishways or take such other measures as would insure the maintenance of existing conditions as to fish migration and fish culture on the river. In this action the commission took the stand that protection of the fish was vitally important but that means could be found to save the fish and at the same time permit development of the power resources.

Despite this assurance and despite the tests which are being made in Washington and Oregon to determine means for transporting salmon over high

dams, the measure became a law. Now California has lost an important power resource, the development of a rich section of the state is impaired, and the fish are "saved." But, like the fisherman, we feel that California has caught an expensive fish.

Must the Colorado River

Development Wait Two Years More?

THE speedy determination of a policy of development for the Colorado River hit another snag in the Arizona election. George W. P. Hunt, incumbent, has been returned to the gubernatorial chair for the fifth consecutive time. Seemingly two years must again elapse before that state will act upon the Colorado River Compact. In the meantime power development, irrigation and flood control are again subject to the vagaries of Arizona politics.

Opposed to Governor Hunt was a candidate who announced himself in favor of the immediate settlement of the Colorado River question. But politics prevented his election. That he lost by a bare majority of 1,012 votes indicates that the people are not all thoroughly in accord with the policies of the present chief executive of the state.

The Colorado River is one of the few great natural resources within the boundaries of Arizona. Its early development means much to the people of that commonwealth. Yet until Arizona ratifies the Colorado River Compact, nothing can be done because the Federal Power Commission has announced that it will grant no permits nor licenses until the several states concerned have reached an agreement regarding the equitable distribution of the waters of the river and this agreement has been ratified by Congress.

Many surveys of the river have been made and much of the preliminary engineering work completed. Construction on one project at least could be started within a short time provided a license was issued. Not until actual construction is started will Arizona begin to benefit.

It would be wise for Governor Hunt and the newly elected legislature to take these facts into consideration, and if the Colorado River Compact is not satisfactory to the state, to take steps to draw up a treaty that is. If not, the voters may not be so acquiescent two years hence.

Following the Footsteps

of the Pilgrim Fathers

ONE of the earliest arguments against government ownership in this country is to be found in the sign which marks the site of one of the first houses erected in Plymouth, Massachusetts. "Property," says the sign, "was originally commonly owned, but it was found that homes and improvements were not made until the land was subdivided into private holdings." Thus early in the history of American independence, in that first hard winter of 1608, did our forefathers recognize the inevitable failure of enterprises which are everybody's business and therefore nobody's concern. With that first step they placed the fate of this country definitely in the channels of private initiative based upon private ownership.



B LIND Slough Dam of the British Columbia Electric Railway Company at Stave Falls, B. C. The dam was constructed in connection with the company's Stave Falls development and raises the level of Stave Lake 22 ft. Water storage has been increased from 168,000 acre-ft. to 463,000 acre-ft. The dam is 640 ft. in length and was built as part of the project increasing the capacity of the Stave Falls power plant from 35,300 kva. to 55,125 kva.

The 18,000-Kw. Long-Bell Steam Plant

THE heart of the electrified lumber mills and logging operations of the Long-Bell Lumber Company at Longview, Wash., is the recently completed power house which embodies the latest advances in steam plant design. The plant has a rated capacity of 18,000 kw. and contains three 6,000-kw. turbines, with provision in the present building for one additional turbine. It is designed for an ultimate capacity of 36,000 kw. The magnitude of the Long-Bell project, as compared with other sawmills, can be judged when it is known that the average large sawmill in the Pacific Northwest does not use to exceed 3,000 kw., the great majority of plants being operated with less than this amount of power. Charles C. Moore & Company, Engineers, Inc., designed the plant and furnished the equipment.

Soil tests showed that piling would be necessary, and over three thousand piles, up to 60 ft. in length, were driven, practically all by jetting as the only means of getting them down to the desired depth. The plant and mill site are below high water level and are protected by dikes. The piling is cut off below the permanent ground water line, and on this is built concrete foundations for buildings, machinery and stacks. It is a notable feature that, whereas the first pile for foundations was driven on June 18, 1923, in just one year, on June 18, 1924, J. W. Martin, construction manager of the Long-Bell Lumber Company, lighted the first fire under the boilers.

The present power plant building is 192 ft. wide and 296 ft. long, and the equivalent of about five stories in height. The three permanent walls of the building are built of concrete brick, finished on the outside with fire-flashed brick of the same material. Windows and doors are protected by rolling steel shutters, and the plant is of fireproof construction throughout, being entirely supported on structural steel with brick curtain walls. In connection with the plant, there are two reinforced concrete chimneys, each 21 ft. inside diameter at the top and 300 ft. high, stacks being designed to serve the ultimate plant.

There are many features of special design in the plant. The fuel conveying system is complete, based upon certain ideas proposed by the purchaser and developed by the contractor. Belt conveyors are used

THE recently completed steam plant of the Long-Bell Lumber Company at Longview, Wash., embodies many advances in steam plant design. Included among these are a special belt-conveying system for handling hog fuel; the construction of the plant on foundations below the high water line and protected by dikes; the extensive use of motor-driven auxiliaries and the intake of circulating water through a system of canals and ponds. The plant was constructed in record time under the supervision of Charles C. Moore & Company, Engineers, Inc.

for carrying the fuel from the fuel house to the boiler plant; these conveyors are 48 in. wide, troughed, and in some instances run at steep angles. The boiler feed conveyors consist of cables with cast steel flights, and are operated by means of gap wheels and reduction gears. A total of four boiler feed conveyors is installed, two conveyors feeding the boilers on each side of the boiler house. All conveyors are motor driven, and the control of the conveying equipment is automatic. When the conveyors

are started up by pushing the master control button, they start with a time element between each one, in order to reduce the starting load and prevent an excess of fuel collecting at any transfer point. This control is secured by means of automatic time relays. All of the conveyors in operation can be shut down by pushing one button.

The fuel storage house with its conveying system was installed by the engineering staff of the Long-Bell Lumber Company.

The boiler plant consists of eight 1,200-hp. boilers, designed for 250 lb. pressure and supplied with superheaters to give about 125 deg. superheat. The boilers are set with large extension furnaces and big combustion chambers, and most excellent results are being secured, it being possible to operate the boilers at as high as 200 per cent of rating with the ash pit draft doors practically closed, but the total capacity has not yet been determined. The boilers are equipped with soot blowers. The elimination of smoke and cinder was a feature of the design on which particular stress was placed by the purchaser, and the results in this respect which have actually been secured are very satisfactory.

The plant has surface condensers, and feed water is secured from wells adjacent to the plant, the water being treated in a cold process water softener and filtered through pressure filters. Filtered water is also used for various other purposes about the plant.

The turbine plant consists of three 6,000-kw., 13,200-volt, 60-cycle turbo-generators. The power is distributed through a modern switchboard, remote control switches being used throughout. Direct current motor-generator sets with a storage battery floating on the line furnish control current for the

switchboard and also power for emergency lighting. Along with a motor-generator exciter set, a dual drive exciter is installed, having a steam turbine and a motor drive, either one capable of operating the exciter at full load. For purposes of heat balance the load can either be carried by the turbine or the motor, or by both. The plant also contains two 250-kw. direct current motor-generator sets to furnish power for cranes and other electrical equipment about the yard and sawmill.

Power for 2,200 and 440-volt station auxiliary motors is supplied by a bank of three 1,500-kva. three-winding transformers, an additional trans-

face condensers and auxiliaries. Steam jet air pumps of the two-stage type, with surface inter and after condensers, are used. Duplicate hot-well pumps of centrifugal type are provided for each condenser, one with a motor and the other with a steam turbine drive.

Circulating water is taken from the Cowlitz River through a canal to the main storage pond, thence through additional canals to the log pond adjacent to the plant. All of these waterways were dredged, material being used for diking purposes. There are four centrifugal circulating pumps of different capacities, two small pumps each being de-

PRINCIPAL EQUIPMENT OF LONG-BELL LUMBER COMPANY POWER PLANT

GENERAL

Location of plant.....	Longview, Washington
Character of service.....	Sawmill load
Capacity installed, kw.....	18,000
Capacity present building, kw.....	24,000
Capacity, ultimate, kw.....	36,000
Dimensions present plant bldg., ft.....	192 x 796 x 5 stories equivalent height
Type of construction.....	Concrete and brick on piles

BOILERS, SUPERHEATERS AND FURNACES

Manufacturer.....	Babcock & Wilcox Co.
Number of boilers.....	8
Type.....	Stirling, Class XII-51
Steam-making surface, sq. ft.....	11,950
Working pressure, lb. gage.....	250
Superheat at rating, deg. F.....	125
Steam temperature, deg. F.....	531
Superheaters.....	Babcock & Wilcox Co.
Type.....	Single U tube convection
Furnaces.....	Hog fuel, fed through chutes

STACK

Type.....	Coniform, reinforced concrete, with brick lining
Designed by.....	Chas. C. Moore & Co.
Labor by.....	Rust Engineering Co.
Diameter at top, inside.....	21 ft.—0 in.
Height, ft.....	300

BOILER-FEED PUMPS

Manufacturer.....	De Laval Steam Turbine Co.
Type.....	Centrifugal
Number.....	1 1 1
Size, in.....	8 in. 6 in. 8 in.
Capacity, 1,000 lb. water per hr.....	800 360 800
Drive (turbine or motor).....	T T M

FEED-WATER HEATERS AND METERS

Heater manufacturer.....	Cochran Corp.
Type.....	Open, with storage tank
Number.....	2
Normal capacity, lb. per hr.....	400,000
Venturi meter, one.....	Builders Iron Foundry
Capacity, lb. per hr.....	1,129,000

MISCELLANEOUS PUMPS

("MDC"—"Motor-driven Centrifugal")

Screen Washing, 2, MDC, 600 gal. per min.....	De Laval Steam Turbine Co.
Turbine-bearing water, 2, MDC, 520 gal. per min.....	De Laval Steam Turbine Co.
Trans. cooling water, 2, MDC, 50 gal. per min.....	Krogh Mfg. Co.
Air washers, 3, 30,000 cu. ft. air per min.....	Spray Engineering Co.
Boiler Wash pump, 1, MDC, 500 gal. per min.....	De Laval Steam Turbine Co.
Sluice pumps, 2, MDC, 800 gal. per min.....	Byron Jackson Iron Works
Desuperheater pump, 1, MD Triplex, 35 gal. per min.....	Goulds Mfg. Co.

former being installed as a spare. Starting and running oil circuit breakers for all 2,200-volt motors are located in a concrete and transite station auxiliary bus structure. The starting bus in this structure is supplied by a special bank of starting compensators.

There is installed one large motor-driven air compressor, which furnishes compressed air for the sawmill. A small motor-driven air compressor furnishes air for general power plant service.

The condensing equipment consists of three sur-

WATER-PURIFYING SYSTEM

Sedimentation tank, one 18 ft. dia. x 30 ft. high.....	Chicago Bridge & Iron Works
Filtered-water storage tank, one 500,000 gal.....	Chicago Bridge & Iron Works

FUEL-OIL BURNING EQUIPMENT

Fuel-oil pump, one duplex steam driven.....	9 in. x 6 in. x 10 in.
Oil heater, one vertical.....	Griscom-Russell Co.

CONVEYORS

Main and shuttle belts, four 48 in.....	P. H. Reardon Co. & Pioneer Rubber Mill
Boiler feed (cable), four 24-in. trough.....	Various manufacturers
Conveyor drives, 8 motor-driven with speed reducer.....	Falk Gear Corp.

TURBO-GENERATORS

Type.....	Curtis Horizontal
Manufacturer.....	General Electric Co.
Number installed.....	3
Generators.....	Three-phase, 60-cycle, 13,200 volts
Capacity, kw. at 80 per cent power factor.....	6,000
Speed, r.p.m.....	1,800
Oil filtration system, Richardson Phoenix.....	S. F. Bowser & Co., Inc.

CONDENSERS AND AUXILIARIES

Surface condensers, 3, with auxiliaries.....	Wheeler Condenser & Engineering Co.
Surface, sq. ft.....	10,000
Steam-jet air pumps, 3.....	2-stage with inter & after condensers
Hot-well pumps, 6.....	3 motor-driven, 3 turbine-driven
Circulating pump, centrifugal, motor-driven, 3.....	One 31,000 gal. per min., one 23,000 gal. per min., one 8,000 gal. per min.
Circulating pump, centrifugal, turbine-driven.....	8,000 gal. per min.
Rex traveling screens, motor-operated, Chain Belt Co.....	Three 8-ft. wide x 32-ft., two 6-ft. wide x 32 ft.

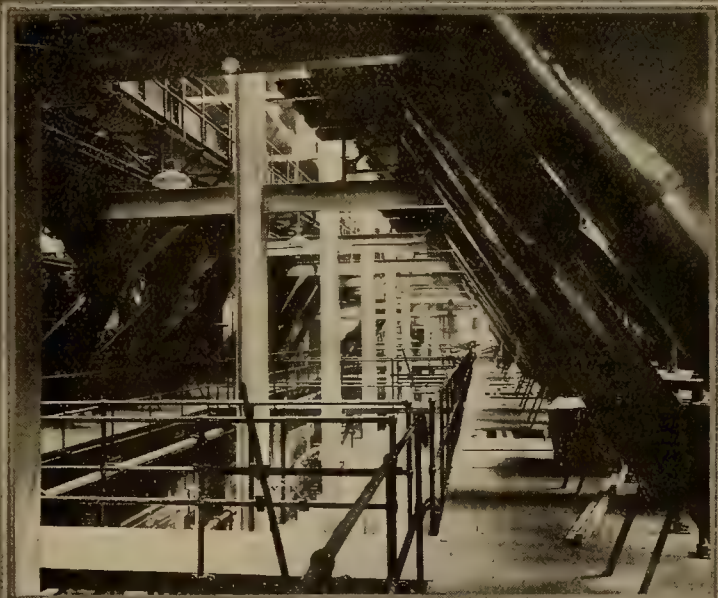
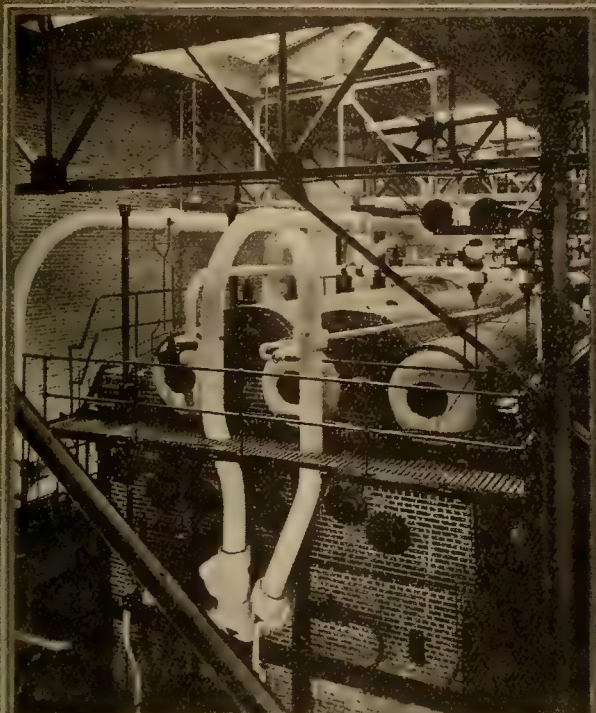
MISCELLANEOUS ELECTRICAL EQUIPMENT

Motor-generator sets, two, 300 kw., 275-volt.....	General Electric Co.
Exciter, one, 200 kw., 125-volt, duplex drive.....	General Electric Co.
Exciter, one, 200 kw., 125-volt, motor-driven.....	General Electric Co.
Motor-generator sets, two, 25 kw., 170-volt.....	General Electric Co.
Switchboard.....	General Electric Co.
Auxiliary transformers, four, 1,500-kva., 13,860/2,200/460 volts.....	General Electric Co.
Transformer inter-cooler.....	Wheeler Cond. & Engineering Co.

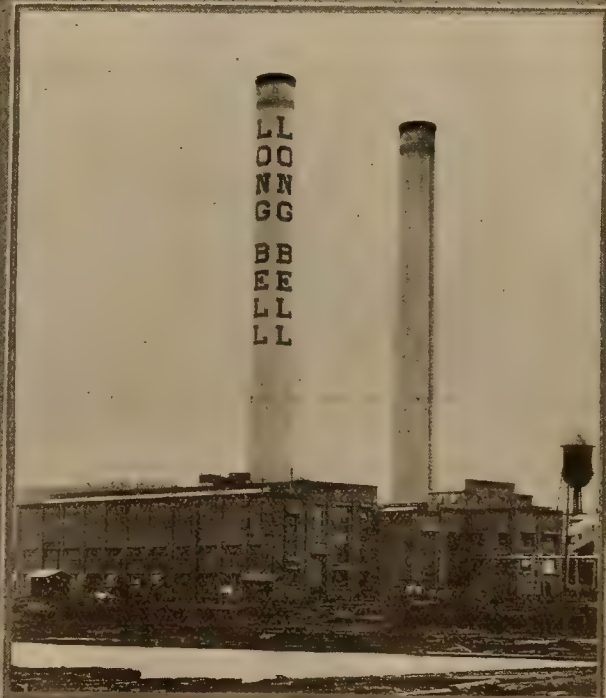
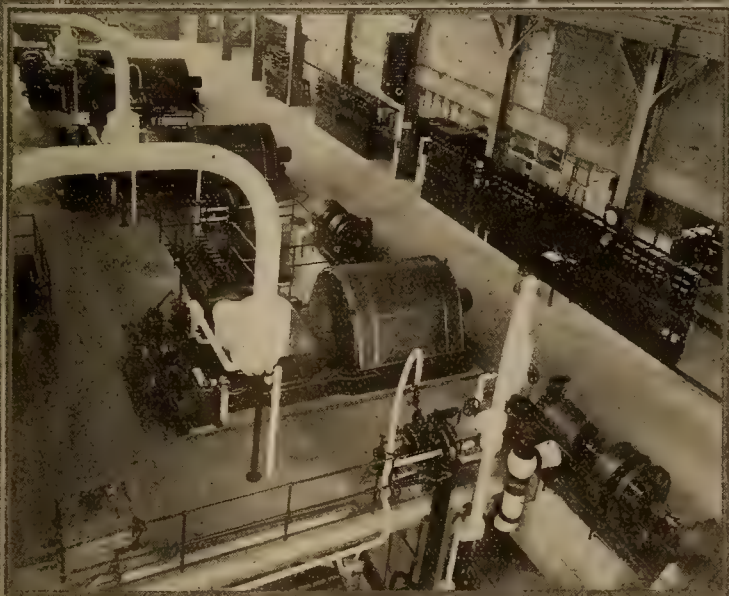
MISCELLANEOUS MECHANICAL EQUIPMENT

Air compressors, two.....	Ingersoll-Rand Co.
Traveling crane, one 25-ton.....	Whiting Corp.
Soot blowers, 48.....	Diamond Power Specialty Corp.
Boiler feed regulators, 16 Copes.....	Northern Equipment Co.
Steam flow meters, 11.....	Cochrane Corp.

signed for full load on one turbine, and are operated one by steam turbine and the other by motor. The large pumps are motor-driven and of different capacities. Water from the log pond is screened through revolving screens into a concrete intake well, from which separate suction lines run to the pumps. The pumps discharge into a header from which water is taken to the condensers and discharged into a header running over the dike into the Columbia River. When the plant is extended, a second discharge header will



VIEWS of the 18,000-kw. plant of the Long-Bell Lumber Company at Longview, Wash. At the upper left may be seen the top of one of the eight 11,950-sq.-ft. Stirling boilers, and above at the right is shown the room containing the oil circuit breakers for handling the 18,000-kw. output generated at 13,200 volts. Hog fuel, delivered by 48-in. belts and scraper conveyors, is fed to the furnaces through the chutes shown at the center right. The generator and turbine room and the exterior of the plant are shown in the illustrations at the lower left and the lower right.



be added. A check valve is provided in the discharge line to prevent water from siphoning back into the plant in case of a broken-pipe line. Each circulating pump is protected by multiport check valves and electrically operated gate valves, so that any pump can be shut down for inspection and repairs. The check valves are of special construction for the service required.

The installation of the circulating water intake with screens was a difficult problem, the soil being loose sand and gravel. The bottom of the intake had to be located considerably below water level. Both ordinary and sheet piling had to be used to prevent settling and to prevent the bottom from flowing upwards, so that finally, within a cofferdam, the excavation had to be made under water and concrete placed under water. After the bottom was sealed, the construction was completed inside the cofferdam. Separate motor-driven pumps at the power plant, taking their suction from the screen chamber, furnish water for washing the screens, the debris being drained to waste.

Two open-storage type feed water heaters are used, either one of the heaters being large enough for ordinary purposes. The storage space of the additional heater is used as a reservoir to prevent wastage of hot water, the additional heater being used for breakdown service. It will be used continuously in the ultimate development of the plant. A large amount of hot water is returned more or less intermittently from the dry kilns of the sawmill. This water is of good quality and at high temperature, and cannot profitably be wasted to the sewer.

A complete system of ash sluicing is provided, with a large ash pit under each boiler, with flooding pipes and a system of sloping concrete trenches running to two motor-driven, specially designed ash

pumps, which discharge the material into a concrete ash sump outside the building, from which ashes are removed by locomotive crane.

A complete lubricating oil system for turbine bearings is installed, with necessary oil tanks, filters, pumps, etc.

On account of the debris which might be in the water, the oil coolers for the turbines were supplied with extra large tubes. Special centrifugal pumps take the cooling water from the intake and discharge it to storage tanks on the roof of the power plant, in order to provide a continuous supply of water to the turbine bearing oil coolers. The water, after being passed through the turbine oil coolers, is discharged to waste.

Each turbine is provided with air washers for cleaning and cooling the air. Air is taken from the turbine room basement and is discharged through galvanized iron ducts to the outside of the building.

A list of the principal equipment in the power house accompanies this article.

The plant has been in operation since the middle of June. It was completed in ample time to operate the sawmill as required. The plant was first started with oil fuel, and four of the boilers are equipped to burn oil as an auxiliary. To start a plant of this kind it would be practically impossible to fire enough slab wood, therefore oil fuel was used in order to get the plant started and to obtain a regular supply of mill refuse fuel for the boilers. The plant has more than fulfilled expectations in performance, and is unusually substantial and complete in design and construction. Steam flow meters, draft gages and thermometers are provided throughout where they will be of service. Ample walkways, stairways and platforms give access to all parts of the plant.

The Saving Graces—Humor and Song

Twin Byproducts of Conventions

By Wm. A. Cyr

DUSK and the shadows falling and all that sort of thing, finds the conventioner with a lot on his mind and nothing on his hands. The stern business of making the country safe for electricity has been done for the day. Co-ordinate Inductance has been induced to co-ordinate, electric range sales have been cooked up, automatic bookkeeping systems have automatically been filed, transportation problems have been transported, there's nothing personal left in the Personnel, and lo! the moonlight sits on yonder bank.

In this restive, poetical, portentous moment there wafts to the ear of him who sits pecking puns from a typewriter in the all-night office of the convention daily news-sheet, the music of the spheres. Bedlam has broken loose again.

Is not this the hour, nay, the beginning of an evening—of song, one of the saving graces of a con-

vention? It could hardly be called an even' song, that one hears, though, for none of the parts come out even. They may all have started on the tape but before long one hears that:

"Sweet Adeline—Goes Where Papa Goes—That's the Curse of an Aching Heart!"

During this same potent hour, it is, that there emerges Skewby X. Blump, the embodiment of that other saving grace, Humor. He comes to solve in his unique way the unsolvable problems of the day and age. And we have need for Skewby and his sister, Sweet Adeline.

I become really serious when I think of humor. To my opinion there is no more powerful, more devastating energy in the world. For it attacks human minds, which in turn attack and conquer the physical universe. Properly and scientifically used, say as an illuminant, it makes the most penetrating

searchlight conceivable. And yet it seems to have been let as much alone by the electrical industry as if it were marked "20,000 Volts, Danger."

Directed by the skilled hand of a "humor engineer," it could dynamite any bogey ever invented. Could the Bone Bill and the California Water and Power Act, revealed as colossal jokes, stand as pompously in the eyes of the voters as they now do and be anything than laughed off the stage? Certainly, if ever the Eighteenth Amendment is alleviated, it will have been because the risible attacks made on it by the press have undermined it, not because of the dignified struggles of serious bodies of believers in personal liberty.

Altogether the electrical industry, like many another industry, has regarded itself far too seriously. The merest hint of criticism has been taken as an affront and a delegation has been sent by a much concerned management to the source of the hint, to have it swallowed, if possible, and apology made. The "second Louie" in the army, seriousness to the nth degree, was the one who took to task the rookie who forgot to go through the formality of a salute. On the other hand the general had got over all that long ago.

When the guns of the jokesmiths are turned upon utilities, as they so often are, it only remains for the industry to see itself humorously and join in the fun. It is no fun teasing someone who doesn't get mad. The ability to take a joke on himself is the only protection that avails against the blasts of humor.

Skewby X. Blump, then, solving the water shortage by his terse phrase, "Don't drink any of it," and the reporter's answer, "We haven't and we won't," was classic. It symbolizes the rising of a giant industry to a bigness that knows no obstacles in even hard times. For Skewby was invented by one who, deep down inside him, was feeling for his company and his management, the real terror of the water shortage.

"Call for me tomorrow," said the mortally wounded, yet still jocular Mercutio to his friend, Romeo, in Shakespeare's play, "and you will find me a grave man"—is one of the bravest lines in literature.

The fact that presidents and general managers of great power companies allow themselves to be called Frankie and Willie in an irrelevant convention paper, speaks well for the great thing that a convention is. There is miggthy little bunk in that sort of situation. Frankie and Willie, for all their power as heads of power corporations, become great human beings instead of exalted alabaster statuettes.

Golf, I have said, is a sport for engineers and organizers. Moisture has some few excuses in its de-pumping qualities, but in the third great byproduct, Humor, there is more honest promise to the industry at less expense of soul, material or money, than in any other phase of conventions.

My gosh—what about Adeline? She's been left out in the corridor warbling her fool head off all this while. Will you believe me when I say that Ade-

li-line song is the first outlet for fun—humor, the first step down from the pedestal of self-importance and the swelled head. Song is so much darn fun, embodies so much foolishness, and limbers up the whole system so completely that it is the first requisite to an enjoyment of humor—and consequently of life.

The golfer turns to golf for relaxation and finds himself as completely enmeshed in scientific practice, formality and mathematics as he was in business from which he sought golf as an escape.

The foggy individual has sought in the depths of the moist mist for release from pursuing thoughts on reality—and made more or less of a mutt of himself in doing so.



Prof. Skewby X. Blump, evolving the planks of his presidential platform—Wild women, Old fashioned song, and Hard licker.

But he who woos humor and song and gives his whole heart to them, achieves the same absolute peace of mind and intoxication, if you please, without the headache chaser.

And believe it or not, some of the most absolutely abandoned singers at Coronado went through every song in every quartette in the "gosh dinged house" without previous oiling up—strange as that phenomenon may seem. It is merely a superstition that a full tank is the more resonant; science doesn't bear it out. All one needs is a sense of humor.

Ah—there now—I've gone and done it. Slap a man in the face, but don't dare to say that he lacks a sense of humor. Cannot the same be said for conventions?

Better Service for the User of Electrical Appliances

By M. A. MacGillivray

ONE of the problems of the electrical industry today is to remove the mystery that surrounds, not only the technic of electricity itself, but much of the business of the industry. The electrical contractor-dealer who fails to justify many of his charges is guilty of maintaining this atmosphere of mystery. He may be leaving the impression that the electrical contractor-dealer is a bandit who works on the ignorance of his customer. And by that attitude he is forcing into department stores and other shops business that rightfully belongs to him.

Here is where the electrical contractor-dealer really has an opportunity to cash in, if he will press his advantage. There is no one better qualified to clear up much of the mystery of electricity than the man in the electrical business. Clearing up the mysteries does not mean that a course in electricity must be conducted in connection with the business. To win his confidence the electrical contractor-dealer need only show the customer just what is wrong. And the customer is usually interested in getting some inside information on the subject of electricity even though he does not understand it completely.

Working on this theory, H. H. Courtright, president and manager of the Valley Electrical Supply Company at Fresno, Calif., has introduced an innova-

tion in servicing appliances which should be studied by others in the retail field.

In connection with the appliance department in this store is a service department that is a step in advance of the usual methods of handling services. Here all cases of appliance trouble are handled. Under the supervision of a specially trained man, the trouble is diagnosed immediately, in most cases before the customer's eyes, and a report made as to the cost and time necessary to make repairs. Minor repairs, such as missing screws or bolts or worn insulation on cords, are made at no cost to the customer. This free servicing of minor troubles goes a long way towards doing away with amateur repairing, which frequently results in more harm than good. The average customer knows little about electrical goods and often thinks that only very minor repairs, costing perhaps a few cents, are necessary, when, for example, the real trouble may be a burned-out element. To receive a bill several times the expected amount is disconcerting, to say the least, and often results in distrust and suspicion on the part of the customer. An estimate of the cost of repairs is made for the customer before repairs are made. This is an important element in maintaining a friendly attitude between patron and customer.

The service department relieves the man at the



Interior of display room of the Valley Electrical Supply Company

counter of the responsibility of estimating cost and attending to repair work, making it possible for him to devote his entire time to selling. Chances for delay in sending the article to the shop to be repaired are eliminated. Under the old system the salesman taking charge of the faulty appliance would, with the best of intentions, tell the customer that the appliance would be ready at a certain hour. But in the rush of business that followed, the article might be forgotten only to have the customer appear for the repaired appliance. This would mean a lengthy explanation from the salesman and another call for the customer. Or it might be that when the customer called, the first salesman would be out and other salesmen would know nothing about the repair job, giving the impression of inefficiency on the part of the salespeople.

Time necessary to make repairs in the service department often amounts to only a few minutes, and the customer will prefer to wait. This offers a fine opportunity for salesmen to show the customer through the nicely appointed display rooms of the Valley Electrical Supply Company, paving the way for future sales and creating a friendly interest in the store. A chance to show and explain new electrical appliances and fixtures to an interested audience of this kind is one that is not overlooked.

It sometimes happens that when a faulty appliance is examined it is found that the cost of repairs will exceed the value of the article. This is explained to the patron and more often than not results in an immediate sale.

The system of tagging used by the Valley Electrical service department is interesting and effective. A bright red tag, perforated in two places, is used. One-third goes to the patron, one-third is kept



A specially trained man handles all calls for service

in the service department office and later filed, and the other part is attached to the article and accompanies it to the shop. Each part bears the same number and information, and there is little chance for mistake. The bright red color is for the convenience of the shopper so the card may be easily found among other cards and papers in the usually overworked handbag or pocket. Files or cards kept in the office show that in the seven months the department has been in existence an average of 500 articles per month has been repaired.

The service department in itself consists of a service office, where troubles are diagnosed and minor repairs made, and a more complete shop in the basement. The office is fitted with shelves filled with neatly labeled glass jars of repair parts, giving it an appearance similar to a drug store. Connected with the office by means of a dumb-waiter is the main shop with its work benches and rows of jars and bins where over a thousand repair parts for standard nationally known appliances are kept in stock. The third division consists of two light trucks, each a complete miniature service department in itself. These trucks go out to repair wiring and to service heavier appliances and electrical devices which can not be brought conveniently into the store.

All repair work comes through the service office, no matter from what source. This system eliminates all question as to who is responsible.



Over one thousand repair parts are kept in stock

Why the Electrical Industry Should Be Interested in the Electric Truck

By K. I. Dazey

Past president, Electric Transportation Association,
San Francisco, California

THE development of electric transportation throughout the East has been highly gratifying. This has not been accomplished, however, solely by the electric truck distributors, but has been aided in each of the cities in which electric transportation has become an important factor, by the central stations, who are mutually interested in the development of this class of business. This assistance has been rendered not only in a sales way, but also through the adoption by such central station companies of electric trucks for their own use wherever they can be economically employed.

The importance of the development of this class of business in California, from the standpoint of the value to central stations, of the battery charging load, can be calculated in direct proportion to the number of trucks of all types used in any congested center of population. It is conservatively estimated that at least 70 per cent of all city hauling can be economically handled by the electric truck. On this basis, and assuming that there are in a given city 5,000 trucks in operation (this figure is simply taken as a basis of the calculation), 70 per cent of this—the number of electric trucks that might be employed—would be 3,500 electric trucks. The average revenue for battery charging is in excess of \$10 per month and this fact is borne out by the revenue derived by the New York Edison Company which exceeds \$1,000,000 per year through the charging of 5,000 trucks. On the Pacific Coast the rates for electric energy are somewhat lower and on the basis of the \$10 per month revenue, the 3,500 potential electric trucks would have a revenue value of \$420,000 per annum.

Line extensions are made by central stations on varying bases. Computing this revenue, however, on a three-to-one basis of gross, means an additional load having an investment value of \$1,260,000; computed on the basis of five-to-one gross, it has an investment value of \$2,100,000.

By reason of the fact that this battery charging load fills up the load valley and does not mean an eventual increase in generating capacity, and further, because this load is handled with a minimum of actual investment, this kind of business becomes all the more attractive and warrants the hearty support of the entire industry. Central stations will continue to enjoy a revenue from the sale of electric trucks in the territory served and manufacturers, dealers and jobbers in electrical appliances of all kinds will also benefit by reason of the fact that the sale of

electric trucks means additional business in the following electrical material:

Storage batteries	Ammeters
Motors	Ampere-Hour meters
Generators	Fuses
Regulators	Panels
Circuit breakers	Charging plugs
Voltmeters	Wire
Conduit	Switches
Condulets and boxes	

Unfortunately, the electric truck today is suffering from misapplications of the past but this is also true with respect to other types of automotive equipment, many of which have been discarded and replaced with types more adaptable to the requirements. The electrical fraternity as a whole does not practice what it preaches insofar as its transportation and delivery conditions are concerned. The adoption of electric trucks will encourage others with delivery problems to adopt a form of transportation which would bring on to the lines of the central station companies a highly desirable class of business and would bring to the manufacturers of electrical materials increased output. Those who are interested in the development of electric transportation feel that a service is being rendered to the central station and to manufacturers of electrical goods.

Housekeepers are urged by central station advertising and by jobbers and dealers to electrify the home and the result of this active campaign over a long period of time has materially enhanced the consumption of electric energy in the home. During all of this time, however, the super-electric appliance, the electric truck, has been neglected; the central stations who generate and distribute electric energy do not use their own product in their transportation units and the dealer in household appliances delivers these appliances with a gasoline truck. Those who are vitally interested in the development of electric transportation feel that they are deserving of greater cooperation.

The May, 1924, issue of the N.E.L.A. Bulletin says:

"Use electric trucks yourselves where they are right for you, where they will clearly save you time and money and where they will enable you to advertise electricity. Use electricity—practice what you preach. When this is done, we will not see gas trucks standing by a curb loaded with electric heaters during the fall months, saying, in effect, to the passing public, 'We, the Electric Light and Power Company that serves you, recommend to you the use

of electric heaters for your home, but we advise against the use of electric trucks for your business." And in the summer time instead of equipping a gas-line truck with a stock of electric fans conveying the same sort of message, let those electric fans be placed on an electric truck so that the two-fold message may go forth—electric fans for comfort in your home and office and electric trucks for economy in your deliveries."

It lies within the power of the members of central station organizations who are interested in

and character will be sold, and there is no factor more important in bringing about a closer approximation to a 100 per cent power factor than the battery charging load which fills up the valleys. This cooperation in the selection of transportation equipment should not necessarily be confined to the equipment owned and operated by individual companies. The message of economy of operation can be most effectively transmitted to public drayage firms with the request that they give serious consideration to the electric truck.



Electric trucks and tractors play an important part in handling freight in San Francisco

electrical development to materially assist truck and battery manufacturers and distributors in their work, and at the same time effect a saving in their own transportation costs and further the general cause of electrical development.

Under the laws of the State of California, all rates of public utilities are fixed by the Railroad Commission and volume of business invariably affects the ability of central station companies to retain existing rates under higher operating costs or to reduce rates. The lower the rate for electric energy, the more electrical appliances of every kind

To a very great extent the attitude of central stations in California and of manufacturers, dealers and jobbers in electrical appliances generally might properly be compared with the story of a man who made a business call upon the proprietor of a restaurant during the noon hour and was advised by the cashier that the said proprietor was "out to lunch."

It is not believed that the electric truck is a cure-all for all transportation requirements but it is contended that a careful study of transportation necessities will disclose a great many usages to which the electric truck could be economically applied.

An Improved Electric Rotary Oil Well Drilling Device

By Lester H. Keim

Engineer, Oil Well Supply Company of California

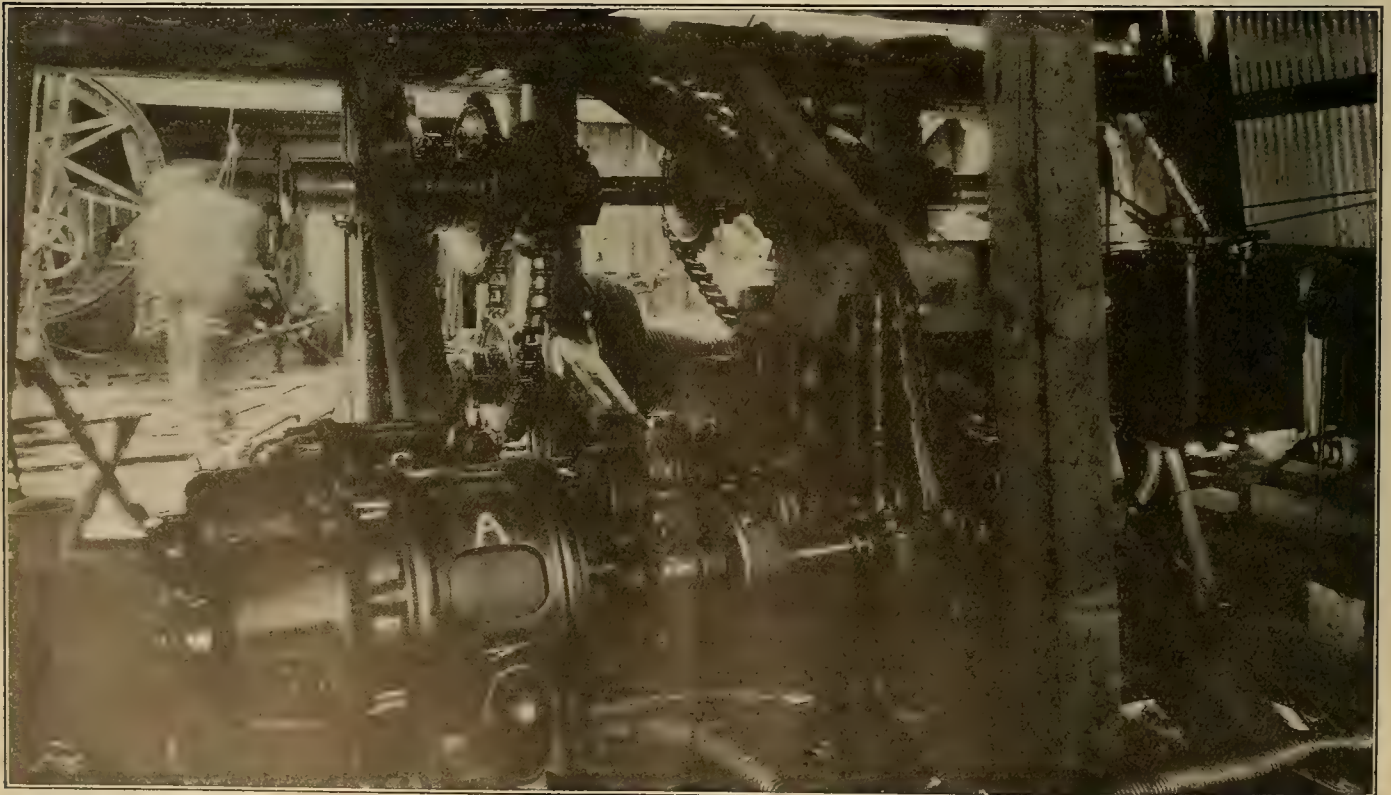
DURING the past two years there has been designed, built, tested and proved in the fields, an electric drive for drilling oil and gas wells which is known as the Hild differential drive. This electrically-driven device is founded on a new conception of the requirements of successful rotary drilling, i.e., that control of the pressure on the drill bit is essential to quick and satisfactory advance of the hole and, also, the relieving of the pressure and retrieval of the bit are necessary to avoid the common hazards encountered in rotary drilling. Primarily, the drive automatically feeds, and varies the pressure of the drill bit according to the formations as they are encountered. It depends for its functioning on the combination of differential gearing and the inherent characteristics of two induction motors, and is another important step in the electrification of the oil fields. Its main interest to the oil producer is that it will drill a well quicker, more economically, with less hazard, and with less wear and tear on the equipment. These results have been obtained on wells already drilled.

A large proportion of the difficulties in rotary drilling is caused by improper feed to the bit. If the feed of the bit could be made scientifically proportional to the resistance it encounters, if this feed

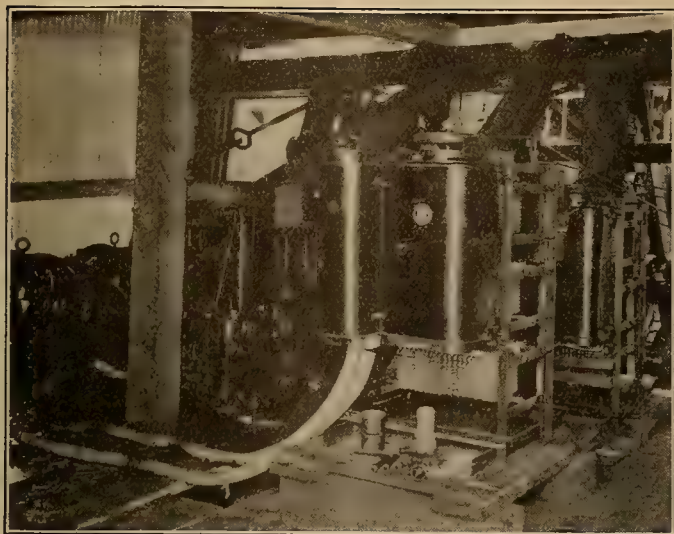
could be regulated automatically and if the resistance encountered unexpectedly caused the bit to actually rise off the bottom, most of the difficulties and delays incidental to present day rotary drilling would be prevented. The speed of drilling could be regulated to the safe limit for each formation as encountered, and the driller would be more free for supervision. The Hild differential drive was developed to secure these much desired results.

This device, invented by Frederick W. Hild of Los Angeles, Calif., was designed, manufactured, tested and perfected jointly by the Oil Well Supply Company, the Westinghouse Electric & Manufacturing Company and the R. D. Nuttall Company. After considerable investigation the Chanslor Candfield Midway Oil Company undertook to drill a well on their Torrance lease in California. This well was successfully completed and the same equipment, with very minor adjustments, is now completing a second well for the same company.

The Hild differential drive consists of a gear box containing a differential gear, to which is connected through flexible couplings, two wound rotor induction motors, which are mounted on a common base. The drilling motor drives one-half of the differential and the rotary table direct through gears and chains;



General view of drawworks, drilling motors and gear unit.



View of apparatus showing location of the control in relation to the gear unit and motors.

the regulating motor is connected to the other half of the differential. The hoist drum is connected to the central portion, or floating part of the differential gear unit.

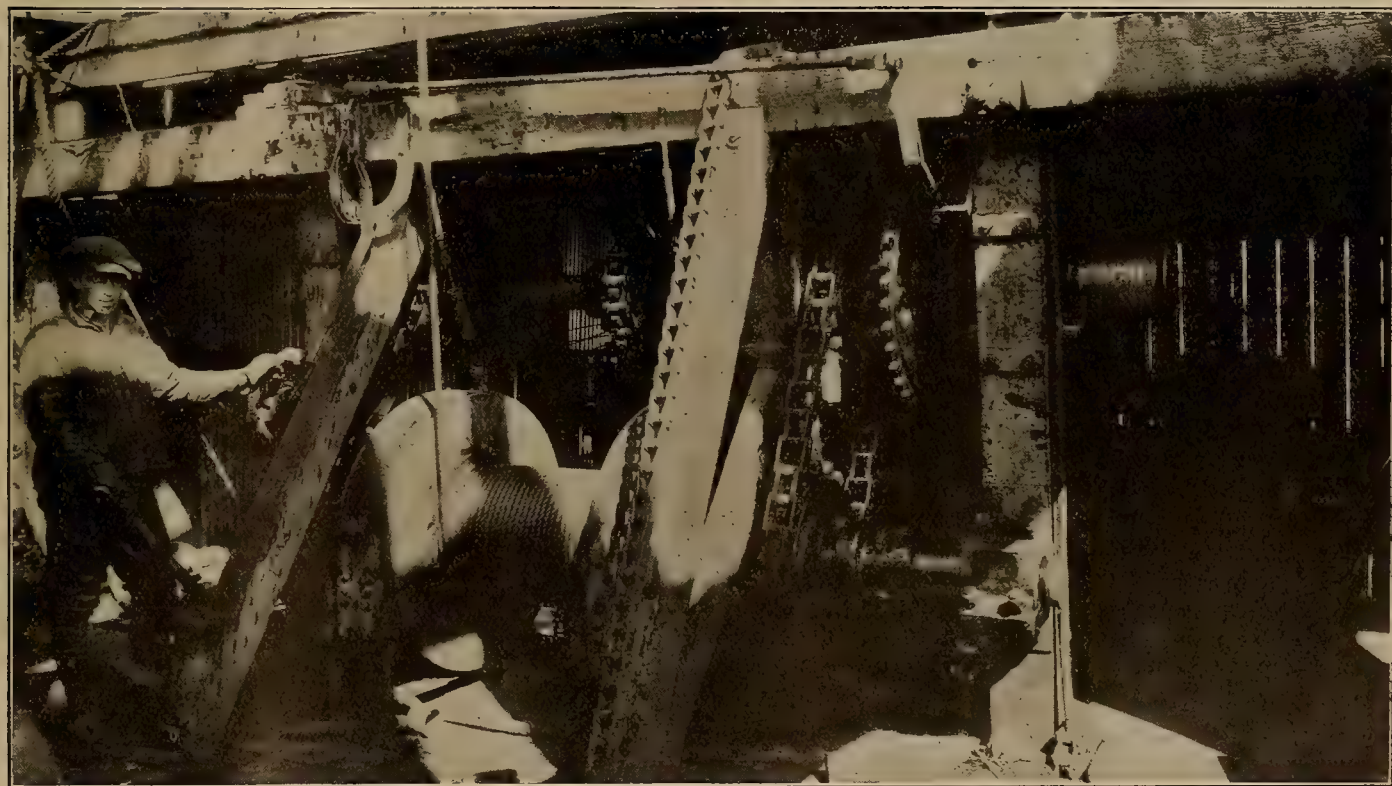
The control for the motors driving the differential gear is rope-operated from a small hand wheel on the drawworks post. The indicating meters are located in the corner of the derrick opposite the driller. The motor-driven mud pumps are in their standard position and in the case of a combination rig, the standard 35/15-hp. pumping motor is connected to the band wheel through a reduction gear and chain in the usual location.

In drilling, the motors are operated in opposite directions, the drilling motor being set for a higher speed, causing a downward feed of the bit. The

greater the difference in speed between the two motors, the greater the feed either downward or upward. If the load on the drill pipe increases, the additional load slows down the drilling motor, thus reducing the rate of feed. Should the load be sufficient to cause the drilling motor to run slower than the regulating motor, the feed reverses and the bit is raised off bottom. Thus, the device tends to maintain a constant predetermined pressure of the bit on bottom; yet it protects the bit and drill pipe from sudden or excessive strains by raising them up until free of the obstruction, at which point downward progress is again resumed. The rate of feed is adjustable, but the maximum feed is fixed for any particular adjustment. By a simple turn of the hand wheel, reversing the drilling motor, the equipment is used for hoisting with the combined power of both motors available. It was found that the device functions quickly and positively as intended in the different formations encountered.

The Hild differential drive may now be considered as well out of the experimental stage and proved as to theory by practical demonstrations under oil field conditions. The results obtained have shown that this drive can drill a hole faster, that there is considerably less wear and tear on the drilling equipment, that the power and maintenance costs are much lower than with other methods of drive, that the driller has more time for supervision and that a straighter hole can be drilled. The automatic features of this drive greatly reduce the dangers from twist-offs and other troubles causing fishing jobs.

All of these results are of far-reaching importance to the production departments of oil companies, and this development comes at a time when a reduction in production costs is a vital necessity.



View of drawworks showing location of clutch, levers, brake and hand wheel.



Electrical Construction

By E. Earle Browne

SO-CALLED "old house" wiring is a specialty branch of electrical construction which requires more than average skill on the part of the mechanic if he is to do the job in such a manner that when he has finished the owner is scarcely able to tell he has been there if it were not for the actual outlets, switches, etc., in place on the walls, ceilings and baseboards. In estimating such work there are many points of construction of the building itself which must be taken into consideration. For instance, if the basement is finished with a plastered or other type of ceiling, it will be necessary to remove a strip of the floor above, and again consideration must be given to the construction of the floor; i. e., whether it is single T.&G. pine or rough diagonal beneath a hardwood finished floor. In some cases, as in kitchens and baths, a tile floor may be encountered which would ordinarily mean that it would be cheaper to remove and patch a strip of the basement ceiling finish unless same is in a decorated ball room or billiard room, in which case it would be necessary to install the circuit wires in conduit on the outside of the house and "fish" from the outlet parallel with the floor joists and install in flexible conductors or loom. This also applies to the upper floors as a single T.&G. pine floor on the second floor is much easier to remove and cheaper to reinstall than a hardwood floor. Some houses have a portion of the first floor but one story in height, and often there is not sufficient attic space in this section to allow a man to work in same. This, then, means that the work must be installed in metal moulding or a strip of the finished ceiling removed and then repaired and redecorated. In unfinished basements, when the inspection department requires that wires through joists be protected by being boxed in, it is usually cheaper to install the wiring in rigid or flexible conduit or steel armored conductors. The wider use of the electric air heater, which necessitates separate circuits from panel board to each outlet, would make such a multitude of wires to be protected, if run through the first floor joists, that in some cases it would entail the finishing of almost the entire basement ceiling.

The dividing of the job into classes of work, as was brought out in the Nov. 1 issue of the Journal of Electricity, pages 330-332, applies with equal or with greater importance in "old house" work than in new construction.

The conduit services as detailed in the previous article are all based on a length of 20 ft., but as this is, on the average, too short for an "old house," it is well to measure up each individual job and then to add the extra labor and material to the units above mentioned to obtain the exact selling price for that subdivision of the work.

Assume a 45-ft. three No. 10 wire service:

20 ft. as per unit.....	\$19.74
25 ft. ¾-in. conduit at \$17.10 C.....	4.28
80 ft. No. 10 wire at \$26.35 M.....	2.11
5 ¾-in. straps at \$1 C.....	.05
½ hr. extra labor at \$1.50 hr.....	.75
Total.....	\$26.93

On many houses now being wired the service is made large enough to accommodate a cooking and heating load and in this case the length of run and difficulty of installation must be taken into consideration, as it is of course necessary to run the service conduit on the outside of the building and use an "LB" type of conduit with closed cover and rubber gasket where going through the wall into the service switch. If a workmanlike job is to be made, this part of the installation should be run close under the "overhangs" of the building and down the side of a down-spout or back of some other moulding or offset in the building construction. These large services are never less than 1¼-in. conduit and are often as large as 2-in., which of course means that the labor to make a neat job often amounts to as much as a day and one-half for journeyman and helper or a total selling price for labor only of \$30.

The unit of \$2.27 each for cutouts is, of course, applicable to the old building, but if there be a large number of 220-volt air and water heater and range circuits this unit would be too small, as the following will show:

Cutout for Air and Water Heaters—

Cabinet	\$ 1.00
1 30-amp. cutout, No. 1919 Bryant.....	.84
2 30-amp. cart. fuses.....	.35
2 Federal bushings.....	.18
Labor, ½ hr.....	.75
Total.....	\$ 3.12

Cutout for Range—

Cabinet	\$ 1.50
1 60-amp. 3-p. cutout, No. 1927 Bryant.....	3.60
2 60-amp. cart. fuses.....	.60
2 1-in. locknuts.....	.06
1 1-in. bushing.....	.08
1 hr. labor.....	1.50
Total.....	\$ 7.34

As mentioned above, the air heater circuits are usually easier and therefore cheaper to install in conduit or basement ceiling for the first floor, and for the second floor run to the attic with conduit exposed on the rear or obscured corner of the building, and then through the second floor ceiling joists in knob and bushing to a position over which the outlet is to be installed and fished in loom as usual in the partition or wall.

If several circuits are to be run to the second floor there can, of course, be installed a maximum of four 2-wire circuits in one conduit, which will be better so far as making a neater job on the exterior of the building is concerned. Assuming that there are four heater outlets on the first floor and three on the second floor, a list of material to install the circuits from the cabinet to and including the 20-amp. or larger outlet would be about as follows:

First floor—

40 ft. ½-in. Flexsteel.....	\$ 5.40
60 ft. ¾-in. Flexsteel.....	10.53
95 ft. No. 12 R. C. wire.....	1.86
135 ft. No. 10 R. C. wire.....	3.56
8 ½-in. straps.....	.07
12 ¾-in. straps.....	.12
4 ½-in. box connectors.....	.72
4 ¾-in. box connectors.....	.96
2 20-amp. polarity receptacles No. 5552.....	2.78
2 25-amp. polarity receptacles No. 446.....	5.55
2 20-amp. polarity plates No. 5554.....	.59
2 25-amp. polarity plates No. 447.....	7.40
2 20-amp. polarity plugs No. 5553.....	1.85
2 25-amp. polarity plugs No. 448.....	5.00
2 switch boxes.....	.60
2 switch boxes.....	1.20
Incidentals and inspection.....	2.00
19 hr. labor.....	28.50

Total.....\$78.69

Second floor—

40 ft. 1-in. galv. conduit at \$14.60 C.....	\$ 9.84
700 ft. No. 12 R. C. wire at \$19.60 M.....	13.72
8 1-in. straps.....	.10
4 1-in. locknuts.....	.12
2 1-in. bushings.....	.15
1 No. 72171 box ½-in K. O.....	.42
1 No. 72 C 2 cover.....	.14
6 Federal bushings, No. A2.....	.65

2 1-in. LB condulets.....	2.52
2 No. 300 covers.....	.89
2 1-in. gaskets.....	.58
70 5/16x3-in. bushings.....	.63
130 No. 5½ knobs.....	.84
70 ft. ¼-in. loom.....	3.78
3 1-gang switch boxes.....	.90
3 No. 5552 Hubbell receptacles.....	4.18
3 No. 5554 Hubbell plates.....	.88
3 No. 5553 Hubbell caps.....	2.78
Incidentals and inspection.....	2.50
23 hr. labor.....	34.50
Total.....	\$80.12

In the very special jobs and where heating circuits are to be run, it is preferable to measure up each individual circuit and list the material and labor as shown above.

With all the above points in mind it is a simple matter to use the units for the separate types of outlets making up the usual jobs by taking the units for the new house and adding thereto the extra labor and material necessary due to the obstacles anticipated about as follows:

Ceiling outlet—

As per unit.....	\$ 2.78
3 ft. 7/32-in. loom (extra).....	.15
Extra labor (¾ hr.).....	1.13
Total.....	\$ 4.06

Bracket outlet—

As per unit.....	\$ 3.22
10 ft. 7/32-in. loom (extra).....	.50
Extra labor (1 hr.).....	1.50
Total.....	\$ 5.22

Single convenience outlet—

As per unit.....	\$ 4.55
6 ft. 7/32-in. loom (extra).....	.30
1 1-gang wood mat (if above baseboard).....	.50
Extra labor (¾ hr.).....	1.13
Total.....	\$ 6.48

Light circuit—

As per unit.....	\$ 2.61
12 ft. 7/32-in. loom (extra).....	.60
Extra labor (1¼ hr.).....	1.87
Total.....	\$ 5.08

Single pole flush switch—

As per unit.....	\$ 4.15
12 ft. 7/32-in. loom (extra).....	.60
1 1-gang wood mat.....	.50
Extra labor (¾ hr.).....	1.13
Total.....	\$ 6.38

To all these must be added any flooring, either soft or hardwood, tile, composition, etc., as it is often necessary to call in a contractor from one or more of these trades to replace them properly. The ordinary T. & G. pine floor is easily replaced by the wireman, and therefore the extra expense is merely for a small amount of lumber and his time. The latter is reduced to a minimum, due to the fact that he is on the job, and consequently no traveling forth and back is necessary, as is the case if an outside craftsman has to be called in.

A Practical System of Accounting for Contractor and Dealer

By F. V. Mitchell

IN the April 15, 1924 issue of the Journal of Electricity was presented an illustration of the Combined Cash Book-Journal as applied to the small electrical store. It was also later stated that this book was subject to expansion and could be arranged month, as applied to the analytical method. It will be noted that the Merchandise Account is subdivided into separate columns for the three departments, and the Automobile Expense Account also. It is possible through the use of fly-leaves to provide separate col-

COMBINED CASH BOOK - JOURNAL										MONTH OF OCTOBER, 1924 -									
- BANK -					DATE	DESCRIPTION	CASH SALES		ACCOUNTS RECEIVABLE		ACCOUNTS PAYABLE								
BALANCE	DEPOSITS	CASH DRAWN		CR.			CASH NO.	DR.	CR.	DR.	CR.								
1	1976.45	25	CR	1924	Oct 1	Balance in Bank							1						
2						City Real Estate Co. - Oct. Term		100					2						
3		500.00			4	J. H. Smith - 1402 A St.				500.00			3						
4		652.25				E. S. Jones - 1207 B St.				652.25			4						
5		1552.75				Cash Sales	1552.75						5						
6						Weekly Payroll		101					6						
7		980.00			10	R. J. Williams - 1015 C St.				1000.00			7						
8		627.00				C. E. Adams - 1164 D St.				650.00			8						
9						Electrical Supplies Co. - Sept. 4c		102			1942.50		9						
10						" Dictators Co. "		103			592.50		10						
11						" Appliances Co. "		104			465.00		11						
12						Oil Supply Co. "		105			1100.00		12						
13						Auto Repair Co. "		106			627.75		13						
14						Drayage Co. "		107			232.25		14						
15						Paint Co. "		108			264.45		15						
16						Telephone Co. "		109			1530		16						
17		542.25			11	A. O. Johnson - 1370 E St.				542.25			17						
18		475.40				J. K. Jackson - 11212 E St.				475.40			18						
19		1746.5				Cash Sales	1746.5						19						
20						Weekly Payroll		110					20						
21		2985.70			18	A. O. Johnson - 1474 E St.				2985.70			21						
22						Weekly Payroll		111					22						
23					25	" "		112					23						
24					31	Electrical Supplies Co. Oct. 4c							24						
25						" Dictators Co. "					2014.65		25						
26						" Appliances Co. "					594.25		26						
27						Oil Supply Co. "					1500.00		27						
28						Auto Repair Co. "					1250.00		28						
29						Advertising Agency "					1000.00		29						
30						Drayage Co. "					527.00		30						
31						Paint Co. "					354.00		31						
32						Insurance Agency "					201.25		32						
33						Telephone Co. "					1950		33						
34						Dep. of Electricity "					7450		34						
35	2885.05					Petty Cash		113					35						
36		7100.20					3274.00			6805.80	3227.75	3970.10	36						

Sample Cash Book-Journal showing use in recording daily cash

to provide the necessary departmental segregation required in a more analytical system, similar to the one that it is now being attempted to present in detail.

The sample page contained herein illustrates the use of the Combined Cash Book-Journal in the recording of the daily cash transactions and the invoices taken into Accounts Payable during the

umns for as many other expense accounts as desired, but the form presented is sufficient for illustration purposes.

The different columns are totaled at the end of the month after all the invoices covering purchases and expenses for that month have been entered, and the total of the debit columns should equal the total of the credit columns. These totals should be posted

to the debit and credit, respectively, of the proper accounts in the General Ledger, with the exception of the Sundries Columns. The amounts appearing in the Sundries Columns are posted in detail to the accounts in the General Ledger, as specified by the number in the account number column. A Department No. column is provided to be used whenever possible to allocate the expense item direct to a department. The columns are totaled and posted at this point, as all the other entries to be made after the end of the month are of an entirely different character and are obtained from various sources. The other entries referred to are termed Monthly Closing Entries, and only one Dr. and Cr. column is necessary as the

the total debits and credits are posted to the Accounts Payable Controlling Account in the General Ledger and it enables the balancing of the individual ledger with the control without having to wait for all the closing entries to be made, which do not affect the account in any way.

As will be noted, no charges are entered in the Accounts Receivable Dr. column in the Combined Cash Book-Journal daily as it will be recalled all charges for wiring and fixtures are entered through unfinished contracts account, and it would be too laborious to enter each one of these separately in this book. It would result in the use of many additional pages during the month and the totaling across of all

INTEREST DISCOUNT		Accounts Payable	DR. - MERCHANDISE - DR.			DR. - AUTOMOBILE EXPENSE - DR.			- SUNDRIES -				
DR	CR		DEPT. NO. 1	DEPT. NO. 2	DEPT. NO. 3	DEPT. NO. 1	DEPT. NO. 2	DEPT. NO. 3	DEPT. NO.	DEPT. NO.	DR	CR	
1													1
2													2
3										69	12500		3
4													4
5													5
6													6
7	2000												7
8	1200												8
9		5985											9
10		1185											10
11		920											11
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28													28
29													29
30													30
31													31
32													32
33													33
34													34
35													35
36	3300	8100	281260	206865	62225	59425	18500	7250	1750				36

transactions and invoices taken into Accounts Payable during the month

amounts are posted in detail to the proper accounts in the General Ledger.

Another particular reason for ruling off the book at this point is that it would entail considerable unnecessary work to carry the totals of all the columns forward on each page of the monthly closing entries, whereas only the Sundries Dr. and Cr. columns are used on the latter pages. Also, by so doing,

the columns on each page. To facilitate the entry of these charges, a Sales Summary is used and a journal entry made of the totals for the month in the monthly closing entries referred to above. The Sales Summary in this set will be presented in the Dec. 1, 1924 issue of the Journal of Electricity and the monthly closing entries will be taken up step by step.

Low Head Pumping with Small Vertical Screw Pump

Electricity Has Reduced Pumping Costs and Has Made Possible Agriculture on Lands Producing \$1,000 Per Acre

By I. H. SMITH

Engineer, Reclamation District No. 999

The year 1917 marked the closing of levees around one of the largest and most fertile tracts of river bottom land in the Sacramento Valley. This tract is now known as the Holland Reclamation District, about 14 miles south of the City of Sacramento, and contains approximately 26,000 acres.

Previous to the construction of the levees, water covered most of this tract the year around, and tules ten feet high grew in a dense mass. Here and there were lakes, varying in area from the size of a pond to 400 acres. When the levees were closed and the water drained into the ditches and canals, some of the deeper lakes still remained.

One of the remarkable things about the Holland Reclamation was the production of a bumper crop the first year on raw, rough tule ground. Old-timers said that the ground would be sour, or too full of tule roots to permit the planting of seed. However, practically all of the land was brought immediately into production; even the largest lake bottom was soon doing its share. This lake is still known as Big Lake, though it has long since ceased being a lake in the true sense.

The main drainage canal of Reclamation District No. 999 passes through Big Lake, the excavated material forming levees on each side. During the summer months, water is syphoned into this canal from the river outside the District, so as to provide irrigation water for the farmers. The water level in the canal, during this period, stands about 3 ft. above the land in the lake, and water seeps slowly through the canal banks into ditches paralleling the canal. This seepage water is pumped back into the canal, thus keeping the lake bottom dry enough for farming.

Until 1923, the gas engine was the only available source of power in the tract. In some respects this type of motive power is desirable, but for continuous pumping service, the cost of a necessary attendant is prohibitive. In

the spring of 1923, a power line was built to serve the pumps in Big Lake. About the same time vertical pumps with a screw type runner were developed and brought on the market. The runner of this type of pump is something like an electric fan, drawing the water into the lower end of a vertical tube lifting it upwards, and out through the elbow near the top. This type of pump requires no priming, is usually designed for lifts of only 5 to 8 ft., and is so proportioned as to have low velocities of water in all sections, with a consequent high efficiency. A 5-hp. motor will deliver 1,500 to 1,800 gallons per minute under the lifts mentioned. The ordinary 8-in. centrifugal pump, operating under conditions above outlined, would require a 10-hp. motor. A float switch acting through a General Electric Company magnetic switch will throw the pump on or off, holding the water level between any desired limits. There is no vibration to the unit, so it is not even fastened to the platform over the sump.

In one season of operation, the power cost of one of these plants does not exceed \$150. The labor or attendance bill is nothing, as any laborer about the place can oil it twice a week. A gas engine outfit doing the work less satisfactorily cost in one season about \$1,000, for labor and fuel. The illustration shows a 20-hp. gas engine and a 10-in. screw pump, after the gas engine outfit "fell down" on the job. The screw pump and its discharge pipe are both below the platform out of sight. Since the picture was taken, a portable "Calco" corrugated iron house was placed over this plant and the controls mounted therein.

Three such units as the one shown are easily taking care of 450 acres in the Holland Tract. The cost of draining is less than it would cost to irrigate similar land. Actual sale of such lake bottom brought \$450 per acre, due to its great fertility. These pumps are

now being manufactured locally and can be delivered on reasonable notice. Low cost of both plant and installation makes the investment much lower than for the usual centrifugal pumps.

After reclamation the land will produce annually from \$150 an acre to as high as \$1,000 or more. The Holland Tract is noted for its adequate drainage and irrigation facilities, as well as for consistent large crops. The tract is also one of the most economical reclamations in the valley. Proper application of modern machinery has been a large factor in this success.

Accounting Problem Questions Answered by Expert

The Journal of Electricity has made arrangements with F. V. Mitchell, public accountant of San Francisco, to answer, in these columns, such questions as may be asked on accounting. All readers are invited to forward their inquiries to The Editors, Journal of Electricity. The answers will be published as soon as possible following the receipt of the inquiry.

Question:

What is the effect of a 15 per cent discount on material selling price on a \$1,000 wiring job?

Answer:

The effect is practically the elimination of the net profit on the job, as follows:

	Full Price	15% Off Material
Selling Price	\$1,000	\$910
Material Costs	400	400
Labor Costs	266	266
Total Material & Labor Costs	\$ 666	\$666
Gross Profit	334	244
Overhead (33-1/3% on costs)	222	222
Net Profit, \$112—11%		\$22—2 1/2%

Valley Society Prepares for Home Lighting Campaign

The Sacramento Valley Electrical Society held its regular monthly meeting at the Hotel Senator, Sacramento, Calif., recently and officers for the coming year were nominated. The election will be held at the next meeting.

Victor Hartley, executive secretary of the California Electrical Cooperative Campaign, discussed the Better Home Lighting Activity. He announced that Roy N. Phelan, secretary-treasurer of the Electrical Contractors' and Dealers' Association of Sacramento, had been appointed chairman of District Five, comprising Sacramento, Solano and Yolo Counties. The Sacramento society endorsed the home lighting campaign and will sponsor it in the Sacramento Valley. The district chairman announced the appointment of the following committees: district advertising—Ralph Hunting, Roy Dryer, Arthur Peck, "Steve" Gamble and W. J. Delehanty; district publicity—J. C. Hobrecht, Al Scott and R. J. Finchley; school relations—George B. Sanford, chairman; club contact—Ed. Florence, chairman. J. W. Anderson and R. T. Stephens were made district vice-chairmen.

S. F. Worswick, sales manager of the San Francisco branch of the Taylor Instrument Company, addressed the meeting on the manufacture and use of thermometers.



Installation of small vertical screw pump electrically driven, for reclaiming land on Holland Reclamation District

Electric Water Heater Saves Cash For Sacramento Barber

Barbers are finding that it is not only economically possible, but that it is as cheap or cheaper to heat water by electricity, rather than by other fuels. This has been the experience of George K. Davis, 2404 Second Avenue, Sacramento, Calif., who has had a 2-gal., 110-volt Wesix special automatic electric water heater installed in his one-chair shop since March of this year. Previous to



Electric water heater installed in Sacramento, Calif., barber shop

the installation of the electric heater, Mr. Davis paid an average of \$4 per month for gas to heat water only. His present bill for heating water, operating an electric fan, and operating his tools averages from \$2 to \$2.50 per month. He estimates the water heater is only costing \$1 per month.

The performance has been beyond his expectations and the heater has been entirely satisfactory. Mr. Davis is a real booster and never hesitates to call attention to the heater, which is conspicuously located in his shop, as shown in the accompanying picture. Mr. Davis also fully appreciates the convenience, the elimination of excess heat and obnoxious odors, and the other advantages of electric water heating.

Through the sale of electric water heaters to barber shops, beauty parlors and other similar industries there is opened to electrical contractor-dealers another avenue of profit.

Electragists Distribute Report on Armored Cable Wiring

The Association of Electragists, International, is distributing to members a report of results arrived at so far in an investigation of armored cable wiring which is being made by Arthur L. Abbott, technical director of the association. This is in the form of a twelve-page booklet entitled "Preliminary Report on Armored Cable Wiring: Labor Costs and Installation Methods."

It is the intention that this work shall continue for a number of months, but in view of the facts that no estimating data of this nature have ever been published, and that the ease of installation and low cost of this kind of wiring are not well understood in some localities, it was deemed advisable to publish a preliminary report at this time.

The section dealing with Materials and Installation Methods describes the work in considerable detail. It is illustrated with cuts of typical ceiling outlet boxes, sketches of methods of installing switch boxes, and a sketch and half-tone showing clearly how a skilled workman cuts the cable.

Under the heading of "Handling the Job" the contractor is advised to make a layout of some kind for every job; the importance of an adequate supply of tools and materials and of proper supervision is pointed out; and the actual method of procedure on the job is briefly described.

The contractor is urged to keep certain simple cost records of his jobs, so that he can check the labor units and if necessary modify them to fit his own particular conditions, both as to the class of work done and the efficiency of the labor he employs.

The methods of estimating work in the various classes of buildings are fully covered. Standard times are tabulated for each class of building. It is advised that labor on the outlet boxes and cable in common new residences,

old houses, and apartment buildings be figured by means of a time allowance per outlet. In unusually large and fine residences, the time allowance per outlet is increased to cover the more careful work required, extra time is to be added for all outlets occurring in paneled work, and a job factor is introduced to cover lost time occasioned by delays in the progress of the building. On account of variations in the quantity of cable per outlet in a building of the commercial type, it is necessary in such buildings to apply labor units to both the outlet boxes and the cable.

Standard Specifications Prepared for Pole Riser Service

With the growth in the demand for underground entrance services for residences and other buildings not located in a district served by underground distribution it has become necessary to standardize on the type of construction used in leading in the service wires. For this reason, and to provide the best possible type of entrance service from overhead to underground at the most reasonable cost, the engineering department of the Pacific Gas and Electric Company has issued a standard specification for this work and has prepared a blue print covering the requirements. This blue print, which is reproduced herewith, is distributed gratis by the company to electrical contractors and dealers and embraces all specifications embodied in this class of work.

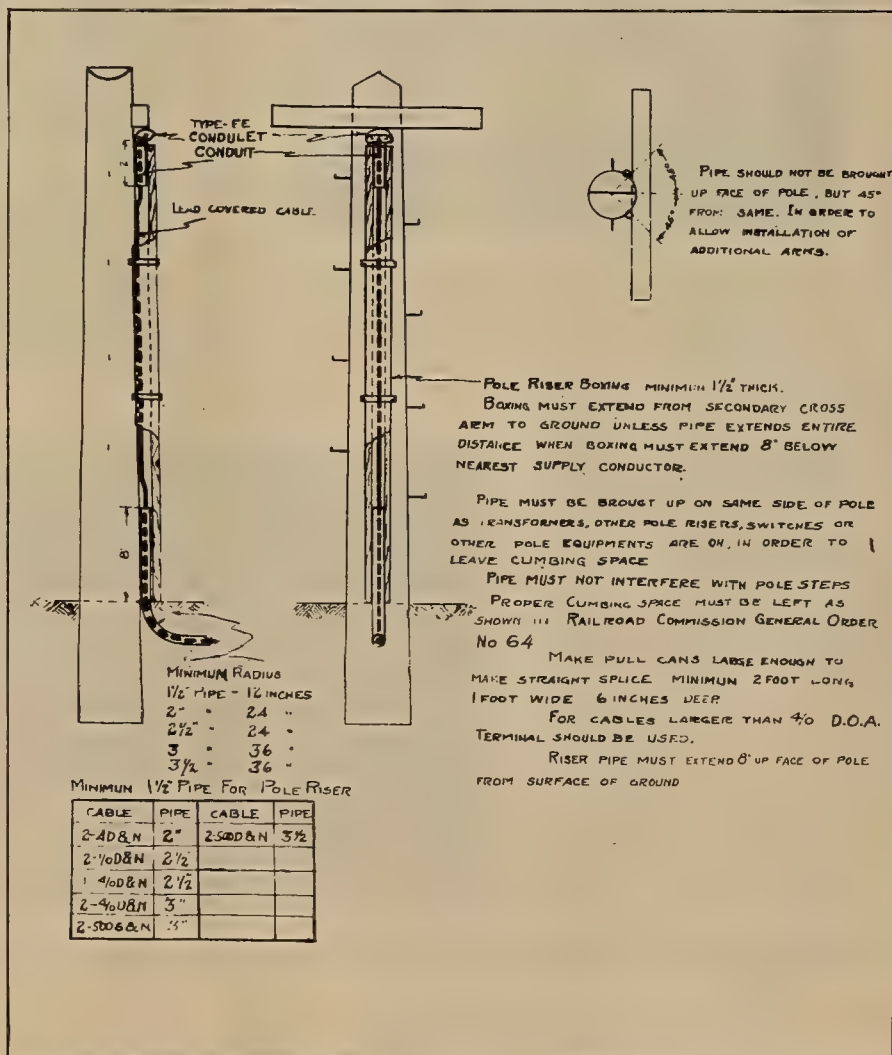


Diagram of standard pole riser service as prepared by Pacific Gas and Electric Company

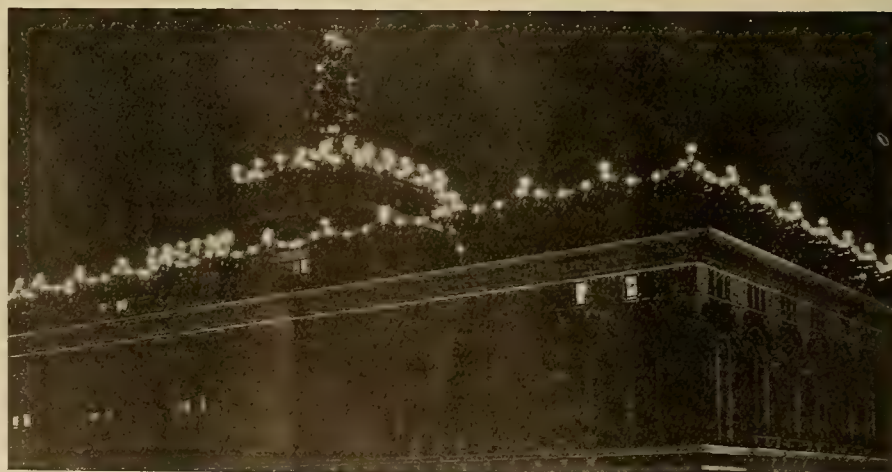
JOBBER, DEALER AND SALES AGENT



Ideas that Sold Electrical Christmas Gifts



ATTRACTING attention to the advantages of electricity is the function of all advertising done by the electrical industry. Throughout the year there is no time when this advertising creates more sales than it does at Christmas. Window displays and newspaper advertisements do much to increase the volume of sales, for every pedestrian and reader is prepared to purchase gifts for family or friend. Giving the 1923 shopper a wide selection, the Electric Furnishing Company, Spokane, used its window to suggest electrical gifts for everyone. The Public Service Company of Colorado used one of its windows in Denver to feature an electric vacuum cleaner, suggesting that it would be an acceptable present for any housewife. Last year the sale of Christmas tree sets was stimulated in Spokane by the artistically illuminated Davenport Hotel. The Electric Furnishing Company will be in charge of illuminating the hotel exterior again this year.



"Give Something Electrical"



Thor

Make this a Practical Christmas

GIVE USEFUL PRESENTS

What gift would be appreciated more than an Electric Appliance that LIGHTENS WOMAN'S WORK?

Take away the drudgery and power of back-breaking work that betrays the housewife who employs the old-fashioned method in doing her housework.

Install a THOR ELECTRIC CLEANER—it saves its way from the start. Clothes stay six times as long washed in a Thor vacuum. Nothing to get out of color in a Thor. Wear and tear is reduced to almost nothing. Earliest mechanism prevents damage. It operates on less than one cent an hour to run. \$10 clothes put on in your home, small monthly payments complete the balance. She'll like new for Christmas.

A phone call to John does bring a THOR into your home for practical demonstration.

ELECTRICAL SUGGESTIONS FOR CHRISTMAS:

- PERCOLATORS
- TOASTERS
- WAFER IRONS
- HEATING PADS
- REFLECTING LAMPS
- FLAT IRONS

Be sure and see it before you buy.

ELECTRIC RANGES

- AIR HEATERS
- CHAFING DISHES
- STYLISH, new designs

HAIR DRESSERS

- DEPLUERS
- LANE
- GRINDERS

ELECTRIC APPLIANCE COMPANY

Electrical Gifts Are Practical Gifts



Buy Standard Approved Electrical Appliances

ONLY A FEW DAYS remain to do your Christmas shopping! But you need only a few minutes to purchase the one gift which will please wife, mother or sister most. ELECTRICAL APPLIANCES are gifts which home-loving women fully appreciate. But protect yourself and recipient by purchasing standard approved appliances—appliances which are guaranteed by both manufacturers and Electricians—those dealers who are members of the Electrical Co-Operative League.

If uncertain as to what to give, why not secure an Electrical Co-Operative League Gift Certificate from any dealer-member?

Look for this Emblem!
It is Your Protection!
Consult the Electrician who displays it. He is qualified to Serve You.

Electrical Co-Operative League
A Non-Profit Organization of Members of the Electrical Industry, Devoted to the Service of the People.
Champa 7273

LETTERS TO Santa Claus



Dear Santa:
I have an admirer who spends his time raving about Elsie Ferguson. Have got my hair so it looks like hers, but here it is still something the matter with my face. I wonder if an electric vibrator would help?

Distractedly,
DAISY B.

Modernize the Home



One Premier ELECTRIC CLEANER

Here is a gift that might well be termed the modern's gift supreme. At least so far as concerns the household.

The Premier is the great friend of every mother and of every wife. In a few minutes Premier cleans the house thoroughly without the least strain upon the housewife.

See a demonstration of this preferred cleaner that never grows. Lasts forever. A small payment, put Premier in your house, ready for service.

Lantz Electric Co.
Bank Phone 750

The Denver Gas & Electric Light Company

A Shopping List of Worth-While Gifts

For Mother—From one, or perhaps from all the children:
The Table Shoe—cooks a meal right at the table.
The Iron that Women Designed—there is no iron with so many advantages.
The Waffle Iron—the most popular appliance developed in years.
For Father—the old people, also, and for all others:
The Gey Glass—warmth without setting.
The Turnover Toasters—on other devices makes such wonderful toasts.

Electrical Xmas Gifts

For the Young will be glad to get it:
The Gey Glass—the most popular appliance developed in years.
For the old people, also, and for all others:
The Gey Glass—warmth without setting.
The Turnover Toasters—on other devices makes such wonderful toasts.

Worth-while Christmas Presents in wide variety, at Lowest Prices, on Liberal Terms.
Davis-Shaw Furniture Co.

4 Days Until Christmas! Electrical Appliances Now

The time is growing short. Visit an Electrician—now—and select your Electrical Appliances—the Supreme Christmas gift.

For mother, wife, sister and other home-loving women, a gift could be more acceptable than Electrical Appliances. They are gifts which are used every day in the year.

For the convenience of those who are uncertain which Electrical Appliance would be most acceptable, this GIFT CERTIFICATE will be found and honored by Electricians to select their own gift.

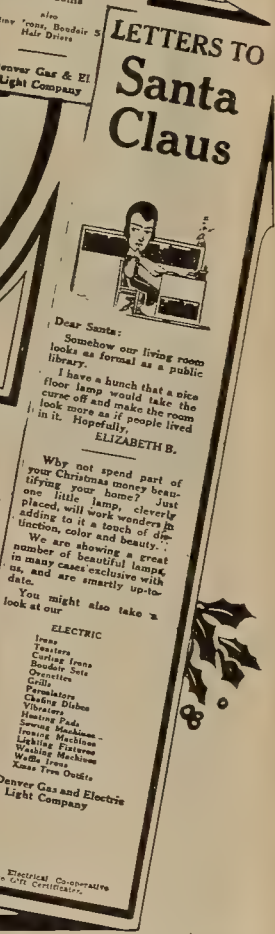
Gift Certificates

For the convenience of those who are uncertain which Electrical Appliance would be most acceptable, this GIFT CERTIFICATE will be found and honored by Electricians to select their own gift.

Electrical Co-operative League of Denver

Make This an Electrical Christmas

LETTERS TO Santa Claus



Dear Santa:
Somewhere our living room looks as formal as a public library. I have a hunch that a nice floor lamp would take the look more as if people lived in it. Hopefully,
ELIZABETH B.

Why not spend part of your Christmas money beautifying your home? Just placed, will work wonders in adding to it a touch of distinction, color and beauty. We are showing a great number of beautiful lamps, and are smartly up-to-date.

You might also take a look at our

ELECTRIC

- Toasters
- Curling Irons
- Bondair Sets
- Ovenettes
- Grills
- Percolators
- Chafing Dishes
- Vibrators
- Heating Pads
- Sewing Machines
- Washing Machines
- Waffle Irons
- Xmas Tree Ornaments

The Denver Gas and Electric Light Company

Newspaper advertisements calling attention to the suitability of electrical appliances as Christmas gifts continue to produce results. In years past these advertisements have been run by manufacturers, jobbers, dealers and cooperative organizations with equal success. The gift certificates, at the lower right, also were effective.

"Give Something Electrical"

WITH the advent of Christmas comes the thought of clear cold days and frosty nights with the ground and trees covered with fleecy snow. Simultaneously comes the desire to give to one's friends. By associating electrical Christmas gifts with the customary Christmas season symbols, Allen B. Spencer of the Public Service Company of Colorado forcefully advised the citizens of Denver to "Give Something Electrical." This window display illustrated at the right, with its neatly tied packages of electrical devices, suggested their purchase for Christmas presents and when the window shopper had been attracted into the showroom courteous clerks completed the sale.



CHRISTMAS season window displays adapt themselves not only to the electric appliances that the average customer considers primarily suitable as gifts, but also to the presentation of the more common standard articles that are purchased throughout the year. The prospective customer in associating the electrical dealer with the Christmas season naturally expects to find his place of business stocked with a large assortment of electrical appliances such as toasters, irons, vacuum cleaners, percolators and similar devices. In general, the average shopper does not think of Christmas as the time to purchase electric lamps. The proper lighting of the home is not considered unless the electrical industry, by well directed advertisements, attractive window displays and forceful sales arguments directs attention to the importance of a well lighted home during the holiday season. To stimulate better home illumination in Denver, Colo., the Public Service Company of Colorado during the Christmas season last year devoted one of its main display windows to electric lamps. Appropriate holiday decorations and colorful backgrounds were used to tie the display in with the season, and the show cards carried out the same idea. The interest created by this display proved that the electrical dealer can successfully use his windows to stimulate the sales of any merchandise.

SANTA CLAUS, the giver of Christmas presents, dominated the 1923 Christmas window display of the Field Electrical Company of San Bernardino, Calif. George L. Black, who decorated the window, in addition to showing Santa Claus with his collection of electrical appliances ready to go down the chimney from the house top, told the window shopper to whom he could give each article. One of the important factors in favor of this display was the simplicity of the decoration scheme. This focused the prospective customer's attention upon the appliances which were so effectively set off by the sloping background furnished by the snow-covered top of the miniature residence.



"Give Something Electrical"



ELECTRICAL dealers of San Jose, Calif., proved the effectiveness of the cooperative electrical exhibition when they succeeded in attracting 10 per cent of the population to the display, presented prior to Christmas last year. Attractive billboards have

been used to good advantage, particularly when tied in with attractive window displays featuring electrical Christmas gifts. The Washington Water Power Company used the billboard, shown at the left, and a Western dealer trimmed the window at the right.



"Give Something Electrical"

INDUSTRIAL NEWS



California Water and Power Act Overwhelmingly Defeated

For the second time in two years the voters of California have registered their disapproval of the Water and Power Act. Incomplete unofficial returns as this issue goes to press show that the measure was defeated by a majority in excess of 400,000 votes. A total of 7,053 precincts out of 7,467 for the state gave the vote as 297,620 in favor of the Act and 696,216 against it. This compares with 243,604 for the measure and 597,453 against it in 1922.

The measure received bare majorities in three counties—Sacramento, Plumas and Fresno. The affirmative vote in Fresno and Sacramento counties may be ascribed to the advocacy of the measure and the La Follette candidacy by the two powerful newspapers published in the cities of Sacramento and Fresno. The heaviest majorities against the Act were recorded in the southern section of the state. In Los Angeles County the vote was three to one against the bill, while in other counties even higher majorities were rolled up.

In 1922 the vote against the Water and Power Act was approximately two and one-half to one. If the same ratio holds in the official count as is shown in the count to date for 1924, the measure will be defeated by a slightly less margin. This is partly due to efforts of the La Follette advocates, who tied the Water and Power Act into their campaign.

The unofficial count as compiled by the Associated Press and furnished to the Journal of Electricity through the courtesy of that organization follows:

VOTE ON AMENDMENT NO. 16—1924				
County	Total No. Precincts	No. Precincts Reporting	Yes	No
Alameda	558	558	31,925	65,289
Alpine	5	5	5	32
Amador	30	30	474	1,287
Butte	118	110	3,089	4,130
Calaveras	35	30	602	1,075
Colusa	28	28	557	1,797
Contra Costa	115	115	4,712	9,546
Del Norte	11	11	210	363
El Dorado	39	37	1,058	1,337
Fresno	232	189	9,209	7,449
Glenn	34	34	1,097	1,960
Humboldt	86	75	254	7,054
Imperial	55	51	1,646	2,907
Inyo	29	25	402	1,041
Kern	158	109	2,727	6,601
Kings	45	45	964	3,819
Lake	24	24	446	1,202
Lassen	34	19	296	688
Los Angeles	1,906	1,896	90,560	280,670
Madera	46	44	1,199	1,643
Marin	69	69	2,750	6,245
Mariposa	21	19	213	416
Mendocino	90	79	967	3,108
Merced	61	61	1,731	3,820
Modoc	27	23	224	901
Mono	8	5	42	89
Monterey	73	58	1,047	3,622

Napa	51	51	1,176	4,276
Nevada	42	42	1,060	2,211
Orange	136	136	4,988	18,945
Placer	60			
Plumas	29	29	573	569
Riverside	115	115	2,956	10,447
Sacramento	202	202	14,789	13,477
San Benito	29	29	530	1,306
San Bernardino	204	193	4,327	17,265
San Diego	274	167	8,654	13,251
San Francisco	882	882	49,157	76,644
San Joaquin	171	171	5,715	13,069
San Luis Obispo	54	52	1,597	4,872
San Mateo	108	108	4,229	7,954
Santa Barbara	70	70	2,307	8,584
Santa Clara	196	196	10,057	21,005
Santa Cruz	74	74	2,117	4,729
Shasta	55	39	1,046	2,478
Sierra	17	17	206	321
Siskiyou	63	36	1,148	2,075
Solano	58	58	3,474	5,289
Sonoma	124	118	3,198	11,436
Stanislaus	106	106	3,245	8,973
Sutter	30	30	1,040	1,921
Tehama	50	50	1,350	2,389
Trinity	26	17	162	386
Tulare	140	138	4,949	11,107
Tuolumne	34	33	1,061	1,513
Ventura	60	60	1,352	6,144
Yolo	36	36	1,626	3,165
Yuba	34	34	1,125	2,182
Totals	7,467	7,053	297,620	696,216

The official vote for 1922 by counties follows:

VOTE ON WATER AND POWER ACT—1922			
County	Yes	No	Majority No
Alameda	26,332	60,903	34,571
Alpine	6	42	36
Amador	455	1,536	1,081
Butte	2,414	6,114	3,400
Calaveras	681	1,430	749
Colusa	550	2,196	1,646
Contra Costa	4,011	9,693	5,682
Del Norte	116	486	370
El Dorado	857	1,489	632
Fresno	8,669	21,108	12,439
Glenn	973	2,688	1,715
Humboldt	1,830	6,712	4,882
Imperial	1,729	3,351	1,622
Inyo	824	1,429	605
Kern	4,731	11,217	6,486
Kings	662	4,782	4,120
Lake	520	977	457
Lassen	435	1,428	993
Los Angeles	54,022	160,330	106,308
Madera	1,391	2,073	682
Marin	2,299	5,849	3,550
Mariposa	219	657	438
Mendocino	813	4,321	3,508
Merced	1,552	3,915	2,363
Modoc	120	1,390	1,270
Mono	83	180	97
Monterey	1,483	4,973	3,490
Napa	1,295	4,592	3,297
Nevada	961	2,158	1,197
Orange	2,902	14,798	11,896
Placer	2,140	2,997	857
Plumas	417	680	263
Riverside	2,960	9,363	6,403
Sacramento	11,924	13,233	13,009
San Benito	658	1,846	1,188
San Bernardino	3,985	13,909	10,924
San Diego	10,232	20,047	9,815
San Francisco	42,737	74,996	32,259
San Joaquin	5,390	12,977	7,587
San Luis Obispo	1,464	4,647	3,183
San Mateo	3,319	7,233	3,914
Santa Barbara	1,598	6,959	3,997
Santa Clara	7,281	18,243	10,962
Santa Cruz	1,850	5,703	3,853
Shasta	1,287	3,333	2,046
Sierra	136	365	229
Siskiyou	2,021	2,907	886
Solano	3,234	6,303	3,069
Sonoma	2,685	11,299	8,614
Stanislaus	4,444	7,352	2,908
Sutter	747	1,867	1,120
Tehama	1,357	2,296	939
Trinity	231	690	459

Tulare	3,787	12,515	8,728
Tuolumne	1,160	1,666	506
Ventura	1,660	5,901	4,841
Yolo	1,546	3,249	1,703
Yuba	986	2,060	1,047
Totals	243,604	597,453	353,849

The official count by counties for 1924, will be published in an early issue of the Journal of Electricity.

Bone Free Power Bill Defeated by 66,000 Majority

Unofficial returns compiled by a Seattle, Wash., newspaper, complete except for two small counties, indicate that initiative No. 52, the so-called Bone Free Power Bill, has failed by a majority of 66,000 votes. The bill carried in three counties—Franklin, Kitsap and Stevens—with a combined affirmative majority of about 1,000, while in many of the other counties a vote of four, five or six to one was scored against it.

Pierce and King Counties, the home counties of Tacoma and Seattle respectively, where the bill was expected to receive its most substantial support, returned negative majorities of over 2,000 each. The vote by counties follows:

	Yes	No
Adams	218	1,145
Asotin	366	1,384
Benton	339	510
Chelan	1,365	5,214
Clallam	1,352	2,092
Clarke	1,345	5,908
Columbia	234	1,428
Cowlitz	1,007	2,492
Douglas	179	594
Ferry	No returns	
Franklin	977	833
Garfield	93	986
Grant	256	656
Grays Harbor	2,134	4,758
Island	393	493
Jefferson	457	796
King	45,389	47,792
Kitsap	1,172	1,029
Kittitas	1,322	2,637
Klickitat	391	1,782
Lewis	2,494	5,188
Lincoln	708	2,746
Mason	312	746
Okanogan	533	1,714
Pacific	559	2,606
Pend O'Reille	403	1,056
Pierce	17,811	20,031
San Juan	233	671
Skagit	3,695	4,938
Skamania	130	523
Snohomish	6,718	9,983
Spokane	6,792	15,545
Stevens	999	272
Thurston	2,148	4,601
Wahkiakum	No returns	
Walla Walla	2,382	5,135
Whatcom	5,848	7,167
Whitman	1,223	6,217
Yakima	4,889	9,502
Total	117,666	183,621

1925 N. E. L. A. Convention Is to Be Held in San Francisco.—Franklin T. Griffith, president of the National Electric Light Association, on Nov. 14, announced that the next annual convention would be held in San Francisco during the week of June 15, 1925.

Edison Company Announces 1925 Construction Budget

Twenty-five million dollars was authorized by the directors of the Southern California Edison Company on Nov. 13 as the company's construction budget for 1925. This is believed to be one of the largest annual appropriations ever made in the United States for hydroelectric development and the distribution of electricity. Including the budget just passed, the company will have spent and authorized \$143,000,000 for electric development and distribution since the close of the World War.

The \$25,000,000 budget for 1925 will be expended along the following general lines:

For hydroelectric development on the Big Creek-San Joaquin River project	\$ 7,535,000
For completion of steam plants now under construction.....	3,965,000
For increasing the 220,000-volt transmission facilities between Big Creek and southern California.....	1,500,000
For extension of distribution system and betterments in all districts.....	12,000,000

Included in the appropriation of \$12,000,000 for system betterments is the proposed 1925 building program, which is as follows:

14 new substations	\$723,750
32 reinforcements to existing substations	628,000
70 miles of new transmission lines.....	427,000
64 miles of rebuilt transmission lines	225,000
500 miles of new distribution lines.....	835,000
36 operators' cottages	235,000
26 garages	27,000
74 substation transformers, 73,050 kva.	256,000
35 high tension oil switches.....	175,000
100 low tension oil switches.....	80,000
3,000 distribution transformers, 100,000 kva.	750,000
20,000 poles	400,000
6,000 miles of wire, 5,000,000 lb.....	787,000
80,000 high voltage insulators.....	160,000
180,000 low voltage insulators.....	28,000
50,000 meters	459,000

The Florence Lake tunnel, which will cost when completed approximately \$17,000,000, will be finished early in March, and the construction program on the Big Creek-San Joaquin River project will increase the water power generating capacity during the ensuing year by 55,000 hp. This will bring the total generating capacity of the company in water and steam up to 687,000 hp. in time to carry the expected increase in business for next year.

While the company spent about thirty million dollars last year in new construction, approximately ten million dollars was spent for the steam power construction, which was speeded up at an enormous rate to relieve the water power shortage which existed. With the 127,000 hp. steam plant at Long Beach nearly completed and the work at that place very nearly taken care of by the 1924 budget, this year's appropriation will provide largely for hydroelectric development. The expenditures of the company for 1924 and 1925, which will aggregate \$55,000,000, will make a repetition of the shortage conditions of the year of 1924 impossible, so far as service on the system of the Southern California Edison Company is concerned.

Power Development on Klamath Prohibited Forever

Development of hydroelectric power on the lower Klamath River in northern California between the mouth of the Shasta River and the Pacific Ocean has been prevented for all time by the passage of initiative measure No. 11, sponsored by the California Fish and Game Commission. The commission has been strenuous in its fight to prevent the appropriation of the river for power purposes, holding that the Klamath should be protected for commercial and sport fishing. The passage of the measure by a vote of approximately five to three precludes the development of all of the undeveloped and unappropriated water power projects on the Klamath River in California for a distance of 175 miles. The power resources that have thus been rendered useless aggregate approximately 500,000 hp.

The bill was initiated by the fish commission because of the proposed development of 100,000 kw. on the lower river by the Electro-Metals Company of San Francisco. The power was to be used in electro-chemical and electro-metallurgical industries. The company had secured water rights from the California division of water rights and conditional preliminary permits from the Federal Power Commission. The federal commission voted to issue a conditional preliminary permit providing that the licensee, if granted, should require that the licensee should construct fishways or take such other measures as would insure the maintenance of existing conditions as to fish migration and fish culture on the Klamath. In this action the federal commission took the view that protection of the fish was vitally important, but that means could be found to save the fish and at the same time permit the development of this important power resource.

Idaho Commission Orders Further Reduction in Charges

Reduction of the minimum monthly charge from \$3.50 to \$2 for 1-kw. water heater service of the Idaho Power Company, Boise, Idaho, has recently been ordered by the Idaho Public Utilities Commission. The commission's desire to provide consumers with an incentive to use current more economically is given as the reason for this reduction.

The commission also has directed the Idaho Power Company to furnish comprehensive and detailed data regarding its retirement reserve. It will be recalled that some weeks ago the company filed in the local federal district court its bill in equity for the purpose of obtaining a review of all rate and valuation proceedings held before the commission.

First Section of Florence Lake Tunnel "Holed Through"

On the afternoon of Oct. 29 word was received from Southern California Edison Company camps at Big Creek, Calif., that there was only 16 ft. separating the tunnels between adits Nos. 1 and 2, and that the crews were conversing with one another. That night the two headings of the middle or short section of the tunnel were "holed through." This section is 11,954 ft., or nearly 2½ miles long, and is the central connection between the other two

tunnel tangents, which are 4 and 7 miles long respectively.

The heading of this central section, which is driven west, was started on June 13, 1923, and the easterly heading was started June 26, 1923. With the exception of several hundred feet of tunnel that had to be timbered, the excavation was made through solid gray granite. The best monthly advance made in the west heading during June amounted to 582 ft. Some idea as to the accuracy of the engineering involved in this section may be had by noting the way the two headings came together, the alignment and grade lines coming within the thickness of a piece of paper of joining together.

After this section of tunnel is cleaned out and the timbered portion concreted, the crews will be assigned to the other headings now being worked. It is expected that the remaining sections will be "holed through" by March 6, 1925.

Irrigation District Plans Hydro Plant Near Riverside

Construction of a hydroelectric plant with a capacity of 3,000 hp., at an estimated cost of \$300,000, is indicated in an application for permission to divert 2,000 sec.-ft. of water from the Okanogan River filed with Marvin Chase, supervisor of hydraulics, Olympia, Wash., by the Riverside Irrigation District, Okanogan County, Wash. A 15-mile transmission line and a distribution system are estimated to cost an additional \$125,000. The district has bonded itself for \$450,000 and has sold \$250,000 of the issue. The project will put 4,000 acres of land along the Okanogan River near Riverside under water.

The diversion dam is to be 25 ft. high, 100 ft. long on the bottom and 150 ft. on the top. The dam, headworks and power house are to be of concrete, and it is understood that George Nelson, Seattle, has the contract for the job. The power house, constructed adjacent to the dam, will house three vertical, direct-connected, water-wheel-generator units of 950-hp. capacity each, using water at a 250-ft. head. The power will be used for irrigation pumping, and for lighting and power service to Riverside and several other small communities in the district.

Vallejo Public Utility Company Praised by Commission

Final inspection by the California Railroad Commission of the properties of the Vallejo Electric Light & Power Company, Vallejo, Calif., was completed on Oct. 3, and the commission, through its secretary, H. G. Mathewson, has sent a letter of commendation to the company. It is stated that the Vallejo company is among the few electric light and power companies in California to have removed all of the infractions of construction in accordance with commission rulings.

The secretary's letter says, in part: "The commission wishes to take this opportunity of thanking you for the splendid cooperation shown it in the discharge of the duty with which it is charged in this matter. Your properties are among the few which the commission has found in this condition to date, and your very active interest in the pursuit of the work has been most commendable."

Shortage of Power in Southern California Is Past

The power shortage which has existed in southern and central California since June 15 has been ended by rains which covered the state on Nov. 8 and 9, according to F. B. Lewis, assistant general manager of the Southern California Edison Company. Complete returns from the 56 branch offices of the Southern California Edison Company and from the mountain regions in which are located its hydroelectric plants, indicate that the period of the drought has passed.

In commenting on the situation Mr. Lewis has issued the following statement:

In the Big Creek-San Joaquin region, located in the high Sierra in the northeastern part of Fresno County, in which the Edison company has its larger hydroelectric generating plants and principal storage reservoirs, there was an average of 3 in. of rainfall in this storm, which, together with the rainfall of from 1½ to 2 in. in the Kern River region, where the company has three large plants, has brought up the streams sufficiently to furnish practically full capacity to the plants.

In the Giant Forest east of Visalia, where our company's Tule River and Kaweah River plants are located, a cloudburst occurred, 2 in. of rain falling in 12 min. In the San Bernardino Mountains, where the company's Santa Ana River and Mill Creek plants are located, there was on the average 1½ in. of rainfall.

The inflow into Huntington Lake, the company's storage reservoir, located at El. 7,000 in the Sierra, on Nov. 8 was equivalent to the amount of water used from that reservoir for a period of at least ten days. On the high peaks above this reservoir, from 8 to 12 in. of snow fell.

The rain not only removes the restrictions but also enables the company to discontinue the operation of the twelve obsolete steam plants which it has been operating this summer at an enormous cost. Some of these steam plants had not been operated for from ten to fifteen years, and required a great expense to rehabilitate, but have been important factors in the supplying of energy during the shortage. However, it is still necessary to continue the operation of the company's plants at Long Beach and Redondo. For the remainder of the season, if the rains continue, the company's twenty-one power plants will be able to operate at full capacity.

From the thirty-one service districts located in ten counties and supplying 350 cities, towns and intervening rural communities, reports of conditions have been received which indicate the following: In Tulare, Kings and parts of Fresno and Kern Counties, there has been an average of approximately 1½ in. of rain, which so materially assists the agricultural district that no more pumping for irrigation will be necessary this year. Likewise, in Los Angeles, San Bernardino, Orange, Ventura and Santa Barbara Counties, where the rainfall was from 1½ to 2 in., the company's system load will be materially decreased due to the cutting off of the irrigation load.

Despite the fact that through the past summer curtailment of the use of electricity was necessary, the Edison company and other companies with which interconnection has been maintained have been able, through the cooperation of all consumers, to keep all industries sufficiently supplied with power so that no loss of output was experienced. Loss of growing crops was also avoided in the agricultural districts.

Electric Dredges Used to Deepen Lake Almanor Channel

Dredging in Lake Almanor, Plumas County, Calif., has been practically completed by the Great Western Power Company. A channel 200 ft. wide, 16 ft. deep and 2½ miles in length has been dug to permit greater utilization of water from the lake than was possible with the old channel. Approximately 300,000 cu.yd. of material will be taken out of the bottom of the lake bed to form the new channel.

In excavating the channel the Great Western company used two electric

dredges of the gold-digger type. The dredgers were manufactured in Oakland, shipped to the lake in sections by rail and motor truck, and were assembled on Lake Almanor. The dredgers are equipped with an endless chain of buckets.

By dredging the channel and the intake to the tunnel leading from Lake Almanor to Butte Valley the power company has made accessible an additional 50,000 acre-ft. of water. This water will be used by the Caribou plant of the company.

Arizona Voters Reject Colorado River Compact Backer

George W. P. Hunt, incumbent, was elected governor of Arizona for the fifth consecutive time on Nov. 4. Governor Hunt defeated the Republican candidate, Dwight B. Heard, whose platform called for the securing of endorsement of the Colorado River Compact by Arizona. (Journal of Electricity, Oct. 1, 1924, page 257.) The successful candidate was elected by a majority of 1,012 votes.

At the same election the voters of Arizona defeated an initiative measure providing for a survey of the Colorado River regarding irrigation and power dam sites. The measure, providing for an appropriation of \$100,000, was defeated by a majority of 2,300 votes.

Washington and Idaho Properties Sold at Auction.—The public sale of the properties of the Washington-Idaho Water, Light & Power Company, scheduled for Nov. 8 at Chehalis, Wash., and Nov. 10 at Lewiston, Idaho, resulted in the purchase of both the eastern and western properties by L. B. Hatch of New York, representing the bond and note holders of the bankrupt company. The Chehalis property was bid in at \$100,000, while the sale price of the Lewiston property was \$1,125,000. The sales have not yet been confirmed by the court. The properties will be operated eventually by Pacific Power & Light Company interests, it is thought.

New Power Plant in Operation.—The Adams plant of the Southern Sierras Power Company, Riverside, Calif., was put in operation Oct. 31, which was fifteen days ahead of schedule. Credit for the rapid construction work that made this possible is due to E. J. Waugh, construction engineer, and Clarence H. Rhudy, resident engineer. The plant, which is in the Owens River Gorge, is of 10,000 kva.

New Substations Put in Service by Edison Company

Three new substations with a combined capacity of 24,000 kva. have recently been placed in service by the Southern California Edison Company. A fourth station with a capacity of 15,000 kva. will be in operation in the near future.

The largest of the new substations put in service recently is the Wabash substation, located near the Valley Junction station of the Pacific Electric Railway in east Los Angeles. This station has a capacity of 15,000 kva., which is all consumed by the Pacific Electric and Los Angeles Railway Companies. Bixby substation, with a capacity of 6,000 kva., has been placed in service in Long Beach. This station has six 2,300-volt feeders which will help out load conditions in that city. The 15,000-kva. State Street substation, which will be fed by three 60,000-volt lines, will be placed in operation in Long Beach in the near future. Eight 11,000-volt feeders will lead from the station. The Casitas substation, located alongside the Santa Barbara-Saticoy 60-kv. lines, has been put in service to relieve conditions around Ventura and Ojai. This station is of 3,000-kva. capacity.

The company also plans to go ahead with some of the 1925 building program in the very near future. The following is part of the work which will be done in the order of its importance:

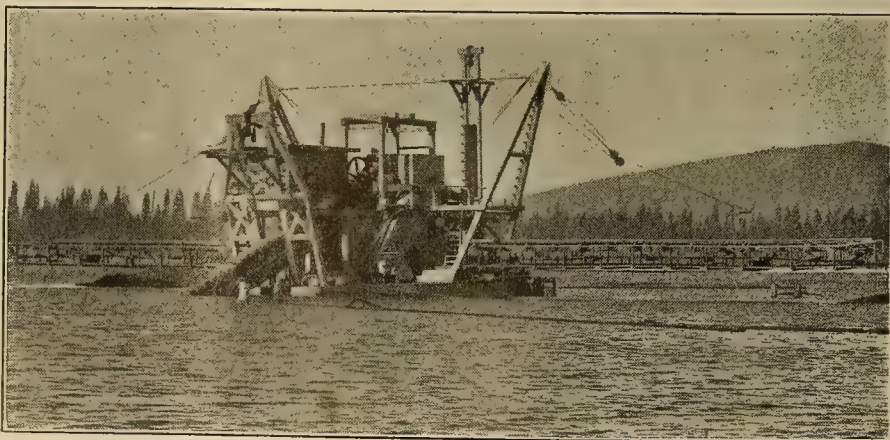
New 60-kv. rack at Inglewood substation.

New substation at Anita, capacity 9,000 kva., voltage 60-1514 kv.

Rebuilding of Dalton substation, 15-kv. rack.

New substations at South Pasadena, capacity 1,500 kva., voltage 15-4 kv.; El Monte, capacity 1,500 kva., voltage 15-4 kv.; Covina, capacity 1,500 kva., voltage 15-4 kv.; Compton, capacity 1,500 kva., voltage 15-4 kv.; Yucaipa, capacity 3,000 kva., voltage 30-11-2.3 kv.

California Water Survey Is Nearing Completion.—The statewide survey of the water resources of California, which is being conducted under the direction of the state engineer, is expected to be completed by March 1, 1925. From this survey it is hoped to base a state-wide policy of flood control, irrigation and power. The water survey was started in 1921, with a \$200,000 appropriation by the state legislature, and when the funds gave out in 1923 the work was carried on through voluntary subscriptions raised by the San Francisco and Los Angeles chambers of commerce.



One of the electrically operated dredgers used in deepening the channel in Lake Almanor.

Initial Experiment With Salmon Escalator Successful

The first set of experiments with an escalator designed to take fish over high dams has been completed by a committee representing the power and fishing interests of the Northwest. The experiments have been conducted on the Condit Dam of the Northwestern Electric Company on the White Salmon River by a group headed by Prof. John N. Cobb, director of the College of Fisheries of the University of Washington. (Journal of Electricity, Nov. 1, 1924, page 343.)

A report of the experiments presented at a recent meeting of the committee on relations with public authorities concerning fishway matters of the Northwest Electric Light and Power Association. Representatives of the fish commissions of Oregon and Washington as well as United States engineers were present at the meeting.

Professor Cobb reported that a measure of success had been attained in the experiment of taking chinook salmon to the top of the 125-ft. dam by the use of a single-basket conveyor. He said that further experiments would be conducted at the same site next spring during the annual run of steelhead trout occurring in the White Salmon River at that time, and that he also plans to experiment on taking young fish down over high dams.

ington Irrigation & Development Company for a 90-ft. dam across the Columbia River at Priest Rapids. Colonel Kelly heard Professor Cobb's report and the discussion on it without comment.

Professor Cobb, in a later published statement about the operation of the



Basket used to raise fish in experiment at Condit Dam.

escalator at the Condit Dam, said, "The device was given exhaustive tests, and I feel more than justified the labor and money expended upon it. It is not my purpose now to go into details of the important results obtained, as they will be published in detail shortly and will speak for themselves."

Lighting Campaign Featured by League at State Fair

One of the most attractive exhibits at the Utah State Fair, held at Salt Lake City, Utah, during the first week of October, was that of the Rocky Mountain Electrical Cooperative League, featuring the Home Lighting Contest. The exterior of the booth was artistically used, as shown in the picture, to convey the message of the contest, by means of pictures illustrating primitive and present methods of utilization of light, and also showing the causes of eyestrain. The national prizes in the contest were also given a prominent place in the general scheme.

The interior showed a completely furnished living room, and by means of a flasher the contrast between proper and improper lighting of the home was effectively displayed. The exhibit occasioned an unusually large amount of interest among the many visitors.



The fish escalator successfully used in raising fish 125 ft. to permit them to pass over the dam.

Among those present at the meeting was Col. William Kelly, chief engineer of the Federal Power Commission, Washington, D.C., who was interested in learning what was being accomplished in fishway experimentation in the Northwest, because of certain applications now pending before the commission involving high dams across spawning rivers. Among the most important of these applications is that of the Wash-

Extensive Illumination Planned for San Diego Bath House

Electric illumination will be applied to the large swimming pool in a unique manner in the new Mission Beach bath house that is being constructed in San Diego, Calif. Not only will the interior of the bath house be lighted by special fixtures, but during the evenings the water itself will be illuminated from seven under-water flood lights.

The seven flood lights are to be placed in the deep water portion of the 175-ft. plunge with the intention of making the bottom as clearly visible there as at the shallow end, where the light from the building itself will penetrate the water. The lights are to be placed in crypts in the side walls of the plunge covered with heavy glass and accessible from the rear, so that the lamps may be changed at will. Each of the crypts will be fitted with 8,000-watt lamps, and it is announced that color effects may be tried as soon as the effects of the original installation can be determined.

The walls of the plunge are to be lined with white ceramic tile so that the colored lighting will be reflected from them in such manner as to produce spectacular results. Not only in the lighting of the plunge will the bath house illumination be unique, but the entire building inside and outside is being planned for original lighting treatment. The entire beach in front of the bath house is to be flood lighted from lights which will play from the roof of the structure. The floor of the building will also be flood lighted from a battery of lights placed in the lawn. Artistic bracket lights, 46 in number, will also be installed around the building. The interior of the building will be lighted artistically by means of flood lights and concealed lighting fixtures, it was announced. Combined connected load is expected to be in the neighborhood of 100 kw. E. W. Weathers of San Diego is electrical engineer in charge of the installation.

The Bryant Electric Company, Bridgeport, Conn., has announced that it has recently re-designed its No. 760 and 762 single and duplex composition body flush receptacles with side wiring terminals.



Exhibit of Rocky Mountain Electrical Cooperative League at the Utah State Fair.

Progress Report on California Lighting Contest Issued

Interest in the Better Home Lighting Contest and in proper illumination for the home has been realized to a great extent in California, according to the progress report of R. E. Fisher, regional director of the contest in California. The fact has been evidenced by the enthusiasm of the children in taking part in the contest and by the requests for speakers coming from women's clubs and business clubs. Such clubs desired speakers not only during the time that the contest was in progress, but also have asked for dates after the contest closes on Nov. 15.

Up to Nov. 12, 72,000 primers had been distributed in the state, and 20,009 signed registration cards had been returned to the California Electrical Co-operative Campaign. The duration of the contest was extended from Oct. 31 to Nov. 15 in order to give all districts an opportunity thoroughly to cover their fields.

Following are the high spots of the progress report issued Oct. 29:

In district No. 2 progress has been satisfactory, and L. R. White, district chairman, has registered 300 entrants in Chico. F. A. Peck, district No. 3 chairman, has secured 100 per cent cooperation from the schools in Marysville and vicinity and has distributed 500 more primers than were originally allotted to the district. The Yuba-Sutter Electrical Development League has advertised the campaign, as have local dealers.

Work has been carried on in the schools of district No. 5, of which R. N. Phelan, Sacramento, is chairman. The Electragists of the district have been active in assuring the success of the contest and have inserted 150 in. of the 192 in. of advertising that has appeared. The local contractor-dealers have been active in district No. 6, according to J. S. Ross, the San Rafael district chairman.

The speakers' bureau has been active in San Francisco, fourteen talks having been made. The Pacific Gas and Electric Company printed 50,000 stickers telling of the contest, and seven large companies have used these stickers on all letters mailed. Both the Pacific Gas and Electric Company and the Great Western Power Company used their booths at the San Francisco Industrial Exposition to distribute contest literature. Two thousand primers were given away there. Over 12,000 primers were distributed in district No. 7, according to H. H. Allison, district chairman. In district No. 8 Clark Baker of Oakland has secured the cooperation of all the schools except in Berkeley. Nine talks have been presented before student bodies.

R. R. Robinson, San Jose, district No. 9 chairman, has reported that at seven talks before schools, 1,450 students were addressed and 786 of these signed up for the contest. A half-page cooperative advertisement was carried by twenty-one dealers of this district, and copies were placed on the bulletin boards of every school in the county. Approximately seventy schools were visited in district No. 11 by the committee headed by H. K. Griffin of Stockton. Excellent results were secured.

In districts Nos. 13-16, in the central part of the state, the committee is headed by A. M. Frost, and he has reported that eleven schools made the contest work part of their course of study, and one town is offering prizes to the grammar school students. Three towns have conducted advertising campaigns. R. R. Caruthers, Visalia, chairman of district No. 17, has reported that the full quota of primers has been used and that interest among the children is high.

District No. 18 could use 20,000 primers if they were available, according to K. E. Van Kuran, district chairman. Each principal approached in Los Angeles has undertaken the distribution of the primers in his own school. Advertisements of the contest have been run in the journals of the high schools and junior high schools with marked success. Thirteen thousand six hundred primers have been distributed in the city. In districts Nos. 20 and 21, A. W. Childs, chairman, has distributed 100 per cent of the material available. In several schools in the district the essay was made an accredited part of the English course. Local electrical organizations have been active in furthering the campaign.

In districts Nos. 22 and 23, despite the fact that there is much sparsely inhabited territory, the committee, under George Bigelow of River-

side, has disposed of two-thirds of its quota of primers. District No. 24, comprising territory in the vicinity of Reno, Nev., has utilized 50 per cent of its material through the energetic interest of the dealers, as evidenced by a full-page cooperative advertisement in the Reno paper.

The regional committee made arrangements for the broadcasting of a series of talks dealing with the contest. Stations in San Francisco, Oakland and Los Angeles agreed to use the material.

Bonds for Purchase of Light Plant Sold by Colorado Springs

Another chapter has been written in Colorado Springs, Colo., on the fight between the city and the central station there in which the former emerged the victor, in the sale of \$200,000 general obligation 4½ per cent bonds at a record premium to the United States National Company of Denver, with a dozen other firms offering closely competitive bids. This is the first series of the issue of \$1,200,000 authorized last May for the erection and purchase of the municipal lighting system.

Inasmuch as the city has agreed to take over the plant of the Colorado Springs Light, Heat & Power Company at a figure close to \$600,000, it is entirely possible that the remaining series of the bond issue will be withheld, only enough securities being sold to provide capital to cover the initial purchase.

The first of the legal steps necessary to put the Colorado Springs company in position to liquidate was effected last week with the appointment of J. F. Dostal, general manager of the company, as a receiver, along with Ivor O. Wingren, Denver attorney, by Federal District Judge J. Foster Symes. Application for a receiver was made by the New York Trust Company, trustee of one and a half million dollars of company bonds, interest on which was defaulted over a year ago.

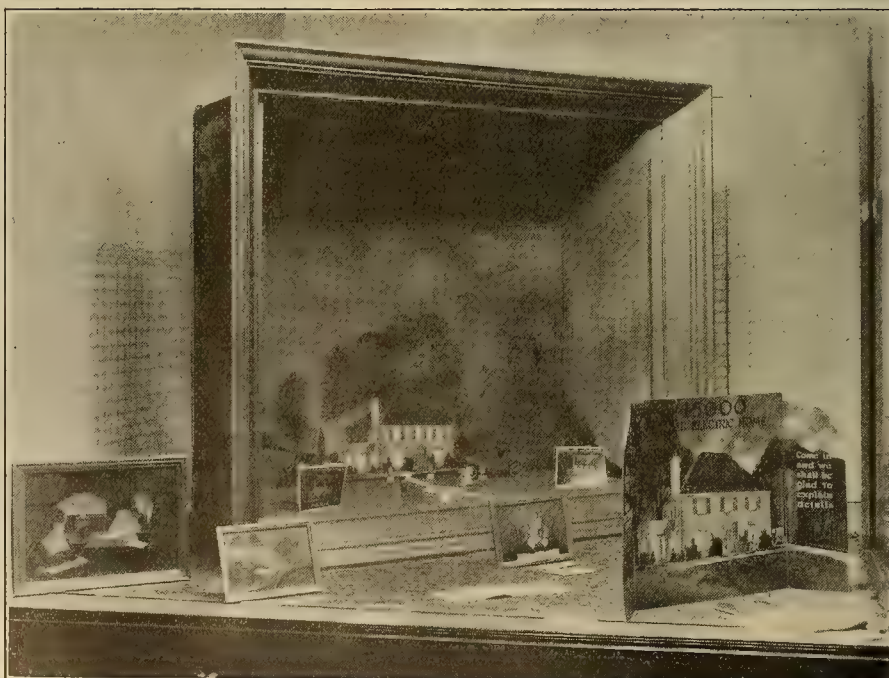
The Federal Porcelain Company, Carey, Ohio, has published several folders descriptive of its Fedco blue radio insulator, setting forth in an attractive manner the advantages of this product.

Map of Transmission Systems of Northwest Is Issued

A map of the Northwest, recently published by the Pacific Power & Light Company, Portland, Ore., shows the main transmission systems of practically every company operating in that territory. Each company's system is printed either in red, yellow or brown, with connected or nearby lines of adjacent companies plainly designated by a change of color. No voltages are marked, but, in general, the principal lines of each company, whether 11,000 volts or higher, are shown. In certain instances of small isolated systems, lines of 6,600 volts are included.

The transmission line data were gathered from the different companies by the engineering department of the Pacific Power & Light Company, while the base map was prepared under the personal supervision of Lewis A. McArthur, vice-president and general manager, who is recognized as an authority on the geography of the Northwest. It is said that this base map is the most accurate map of the Pacific Northwest, in drainage, land lines and names, that has ever been published.

Pamphlet Issued on Domestic Market for Electrical Merchandise.—The U. S. Department of Commerce has issued No. 9 of its Trade Promotion Series, "Domestic Market Possibilities for Electrical Merchandising Lines," by R. A. Lundquist and H. E. Way. This is an analysis of percentage distribution by states. Ten factors that bear upon the purchasing power for electrical appliance lines were decided upon. These are discussed and the final results of the survey given, followed by tabulated developments of the ten factors and a summary. The pamphlet, which is "an engineering analysis of the relative market possibilities in different states based upon definite statistical data," may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C.



One of the window displays used by the Utah Power & Light Company to stimulate interest in the Better Home Lighting Contest in Salt Lake City, Utah.

Power Situation Much Improved by Recent Heavy Rains

The recent heavy rains that have fallen in northern and central California are a cause of much satisfaction to power companies and irrigation district officials. The rainfall this season is almost two and a half times the average, and only four times in the last seventy-five years has as much rain fallen by Nov. 10 as has fallen this year. Streams are running in beds that have been dry for months, and hillsides, formerly dry and brown, are now grass-covered. Heavy snow in the mountains, in some places over a foot in depth, give promise of good runoff in the spring. All signs point to continued rains and heavy snows this winter, and the severe drought seems to be definitely at an end.

According to the records of the Pacific Gas and Electric Company, San Francisco, the seasonal precipitation over its system for the period beginning July 1 averages, roughly, double that for the corresponding period last year. All points on the system have recorded a greater amount of rain than fell in 1923, but the northern section of the territory has not received as large an amount in proportion as the central and southern sections. Reservoir content has been increased from 40 per cent of normal to 83 per cent, and the company expects to have about 100 per cent normal storage content by Nov. 15. Normal stream flow, which was 37½ per cent deficient, has been increased by the recent storms to slightly above normal.

Figures furnished by the San Joaquin Light & Power Corporation, Fresno, show that the rainfall at Crane Valley reservoir for the season to Nov. 10 has been 8.71 in. The normal seasonal rainfall to Oct. 31 is 2.56 in., and to Nov. 30 it is 5.08 in. Storage in the Crane Valley reservoir has been increased from 1,393 acre-ft. to 2,198 acre-ft. Precipitation for the season at some of the other points on the system is as follows:

Power house No. 1.....	4.86 in.
Kerckhoff power house.....	4.30 in.
Tule power house headworks.....	10.25 in.
Kern Canyon power house.....	.44 in.
Bakersfield steam plant.....	.32 in.
Fresno.....	1.37 in.*
Merced Falls.....	4.37 in.

*Normal to date at Fresno is 1.14 in.

Prior to the October rains, the flow of the Kern River was about 80 sec.-ft., and that of the San Joaquin River, excluding the water released from storage

by the San Joaquin and Edison companies, was about 60 to 80 sec.-ft. On Nov. 9 the average flow of the Kern River was 144.5 sec.-ft., and that of the San Joaquin 1,210 sec.-ft.

Byllesby Company Forms New Utility Holding Company

H. M. Byllesby & Company have announced the formation of a new public utility holding and engineering and management company to be known as the Standard Power & Light Corporation. According to the company's announcement, the new organization has been formed for the purpose of acquiring valuable controlling and other interests in public utility companies and important hydroelectric power sites strategically located to supply large interconnected power systems.

Formation of the new company, which will be controlled by the Standard Gas & Electric Company and H. M. Byllesby & Company, has been made necessary by the constant growth and expansion of the former. That company has been developing public utility properties for the past fourteen years, and its system now serves over 900 cities and towns in seventeen states, with combined annual gross earnings in excess of \$53,000,000.

Capitalization of the new company will consist of 100,000 shares of preferred stock and 400,000 shares of common, both without nominal or par value, but in case of liquidation the preferred shares will be entitled to \$100 each and accrued dividends before any distribution is made on the common stock. Preferred stock will also be cumulative, with an annual dividend rate of \$7 a share.

Eastern Oregon Light & Power Company Files on Grande Ronde River.—Among the applications to appropriate water from Oregon streams recently filed in the office of Rhea Luper, state engineer, is that of the Eastern Oregon Light & Power Company, Baker, Ore., which has filed on the Grande Ronde River in Wallawa County for 1,364 t. hp.

Bulletin Issued by Purdue University Engineering Department.—The Engineering Extension Service of Purdue University, Lafayette, Ind., has published Circular No. 4, "Operation of Three Phase Induction Motors Under Abnormal Supply Conditions," by D. D. Ewing and C. F. Bowman.

P.C.E.A. Committee Personnel for 1924-25 Announced

Appointments to the sections, bureaux, committees and subcommittees of the Pacific Coast Electrical Association for the present year have been made by the various chairmen. Herewith is reproduced the list of officers of the association, together with the complete committee personnel for 1924-25.

EXECUTIVE COMMITTEE

F. A. Leach, Jr., P. G. and E. Co.—president.
W. A. Baurhyte, L. A. G. & E. Corp.—vice-president.
S. W. Coleman, Coast Counties G. & E. Co.—vice-president.
J. F. Pollard, Coast Valleys G. & E. Co.—treasurer.
S. H. Taylor, 527 Rialto Bldg.—secretary.
R. M. Alvord, G. E. Co.
J. B. Black, Great West. Pwr. Co.
C. L. Chamblin, Calif. Elec. Const. Co.
F. O. Dolson, So. Sierras Pwr. Co.
P. M. Downing, P. G. and E. Co.
A. M. Frost, S. J. L. & P. Corp.
W. L. Frost, So. Cal. Ed. Co.
H. L. Harper, West. Elec. Co.
R. J. Holtermann, Fobes Supply Co.
C. T. Hutchinson, Journal of Electricity
L. M. Klauber, S. D. Cons. G. & E. Co.
K. E. Van Kuran, Westinghouse E. & M. Co.

PUBLIC POLICY SECTION

R. H. Ballard, So. Cal. Ed. Co.—chairman
H. L. Aller, Central Ariz. Pwr. Co.
W. A. Baurhyte, L. A. G. & E. Corp.
J. B. Black, Great West. Pwr. Co.
G. A. Campbell, Truckee River Pwr. Co.
S. W. Coleman, Coast Counties G. & E. Co.
W. E. Creed, P. G. and E. Co.
M. A. Fleishacker, Great West. Pwr. Co.
H. F. Jackson, Sierra & S. F. Pwr. Co.
S. A. Kahn, West. States G. & E. Co.
S. M. Kennedy, So. Cal. Ed. Co.
R. S. Masson, Ariz. Pwr. Co.
P. B. McKee, Cal. Ore. Pwr. Co.
J. B. Miller, So. Cal. Ed. Co.
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A. B. West, So. Sierras Pwr. Co.
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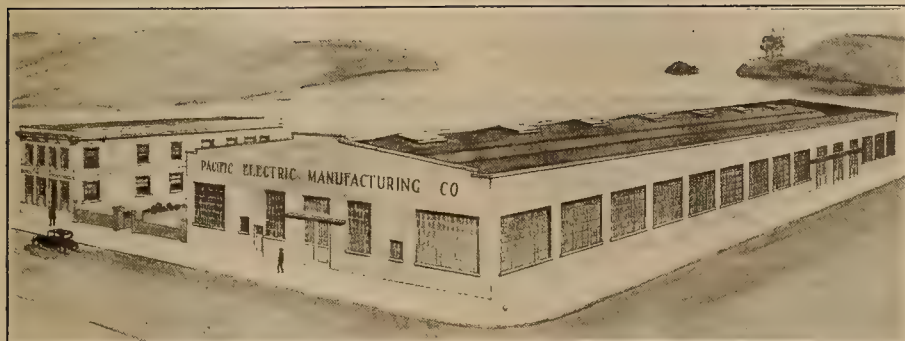
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Architect's drawing of new office and factory buildings being erected for the Pacific Electric Manufacturing Company, San Francisco, manufacturer of high tension switch gear. The new home of the company will be at the corner of Keith St. and Donner Ave., in the new industrial district of San Francisco. The main building, to house the manufacturing department of the company, will be 100 x 300 ft. of reinforced concrete. Spur track facilities will be available. The office building will be of two stories and will occupy a space 36x70 ft. The company expects to be manufacturing in the new plant by Feb. 1, 1925. The company was founded in 1908 by Joseph Thompson, president of the concern.

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 E. R. Northmore, L. A. G. & E. Corp.
 H. H. Shields, Nevada Valleys Pwr. Co.
 T. W. Snell, Coast Valleys G. & E. Co.
 H. C. Stanley, G. E. Co.
 W. R. Van Bokkelen, Coast Counties G. & E. Co.
 J. E. Woodbridge, Ford, Bacon & Davis
 P. H. Yelton, So. Sierras Pwr. Co.

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 G. W. Barker, Journal of Electricity
 J. T. Bigelow, So. Sierras Pwr. Co.
 F. V. Boller, S. J. L. & P. Corp.
 F. E. Boyd, G. E. Co.
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R. L. Cardiff, Coast Counties G. & E. Co.
 H. H. Courtright, Valley Elec. Supply Co.
 J. H. Jamison, Westinghouse E. & M. Co.
 W. C. McWhinney, So. Cal. Ed. Co.
 P. P. Pine, S. D. Cons. G. & E. Co.
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 Frank Weiss, L. A. G. & E. Corp.
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 J. T. Deppe, Pac. States Elec. Co.
 R. E. Heerman, S. & H. Service Elec. Co.
 M. S. Henoch, Westinghouse E. & M. Co.
 J. C. Hobrecht, J. C. Hobrecht Co.
 J. H. Jamison, Westinghouse E. & M. Co.
 H. B. Jenkins, Southwest Elec. Co.
 Fred Lantz, Lantz Elec. Co.
 D. D. MacFarland, Newberry Elec. Co.
 Alfred May, S. D. Cons. G. & E. Co.
 L. E. Moselle, L. A. Bureau P. & L.
 A. H. Nicoll, West. Elec. Co.
 E. A. Norton, Barker Bros.
 H. C. Rice, So. Cal. Ed. Co.
 A. L. Spring, G. E. Co.
 B. M. Tassie, Manning-Bowman Co.
 R. E. Tompkins, Pac. States Elec. Co.

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 P. S. George, Coast Valleys G. & E. Co.
 Alfred May, S. D. Cons. G. & E. Co.
 George Rankin, Cal. Elec. Co-op. Camp.
 D. C. Ray, P. G. and E. Co.
 L. D. Sherman, Great West. Pwr. Co.

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 O. R. Doerr, Great West. Pwr. Co.—chairman range committee.
 W. W. Hicks, Manufacturer—chairman water heating committee.
 E. A. Wilcox, Mfrs. Agent—chairman air heating equipment.
 G. T. Bigelow, So. Sierras Pwr. Co.
 P. H. Booth, Ed. Elec. App. Co.
 J. C. Bortle, Scheeline Mfg. Co.
 O. S. Clifford, Truckee River Pwr. Co.
 H. H. Courtright, Valley Elec. Supply Co.
 H. A. Cram, Landers Frary & Clark.
 Frank Cronan, West. States G. & E. Co.
 J. T. Deppe, Pac. States Elec. Co.
 J. C. Douglas, Edison Elec. App. Co.
 B. Y. Gibson, Walker & Pratt Mfg. Co.
 M. S. Henoch, Westinghouse E. & M. Co.
 J. H. Jamison, Westinghouse E. & M. Co.
 H. V. Mooney, Elec. Heating Engineer.
 J. M. Morris, Westinghouse E. & M. Co.
 H. A. Mulvaney, Elec. Sales Service Co.
 H. C. Rice, So. Cal. Ed. Co.
 R. E. Tompkins, Pac. States Elec. Co.
 M. F. Wales, Coast Counties G. & E. Co.
 Paul White, P. G. and E. Co.

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 Clark Baker, Nat. Lamp Wks.
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 M. C. Hixon, Ed. Lamp Wks.
 Leonard Hobbs, Ed. F. Booth Co.
 C. M. Masson, So. Cal. Ed. Co.
 Dave Pence, Illinois Elec. Co.
 R. S. Prussia, Westinghouse Lamp Co.
 J. S. G. Ross, P. G. and E. Co.
 H. E. Sherman, Jr., Illinois Elec. Co.

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 K. M. Cook, G. E. Co.
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 W. L. Boxall, So. Cal. Ed. Co.
 L. J. Fletcher, Univ. Calif.
 P. S. George, Coast Valleys G. & E. Co.
 R. C. Griffin, P. G. and E. Co.
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 E. J. Cipperly, G. E. Co.
 W. W. Hicks, Manufacturer.
 E. V. Kane, L. A. Bureau P. & L.
 H. A. Mulvaney, Elec. Sales Service Co.
 T. A. Reid, Westinghouse E. & M. Co.
 F. O. Sievers, G. E. Co.
 W. G. Tanner, So. Cal. Ed. Co.
 E. A. Wilcox, Mfrs' Agent.

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 H. B. Cleveland, Gunn, Carle & Co.
 Peter Ducker, So. Cal. Ed. Co.
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 E. A. Hunt, G. E. Co.
 E. Kower, El. Storage Battery Co.
 C. D. Monteith, P. G. and E. Co.
 I. G. Perin, Elwell Parker Co.
 H. C. Rice, So. Cal. Ed. Co.
 W. J. Schaeffer, L. A. G. & E. Corp.
 H. N. Sessions, So. Cal. Ed. Co.
 A. J. Thies, P. G. and E. Co.
 G. F. Wakeman, Ed. Storage Battery Co.
 C. E. Weiss, S. D. Cons. G. & E. Co.
 W. W. Willits, L. A. G. & E. Corp.
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 J. A. Cannon, S. D. Cons. G. & E. Co.
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 P. R. Ferguson, S. Sierras Pwr. Co.
 O. L. Moore, L. A. G. & E. Corp.
 L. A. Reynolds, Great West. Pwr. Co.
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 B. B. Stith, West. States G. & E. Co.
 C. A. Swigart, Cal. Ore. Pwr. Co.
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H. O. McKee, So. Cal. Ed. Co.—chairman
 H. E. Cox, So. Cal. Ed. Co.
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 J. H. Hunt, P. G. and E. Co.
 L. S. Jones, Cal. Ore. Pwr. Co.
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 N. L. Morris, So. Cal. Gas Co.
 T. B. Parks, L. A. G. & E. Corp.
 G. C. Robb, P. G. and E. Co.
 R. E. Thompson, S. D. Cons. G. & E. Co.
 I. B. Walther, Cal. Ore. Pwr. Co.
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 E. G. McCann, P. G. and E. Co.—vice-chairman.
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 R. C. Eccles, West. States G. & E. Co.
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R. J. Cantrell, P. G. & E. Co.—chairman
 Herbert Dewes, So. Sierras Pwr. Co.
 W. E. Durfee, S. J. L. & P. Corp.
 A. C. Johnson, Ariz. Pwr. Co.
 H. E. Luce, Truckee River Pwr. Co.
 H. R. Peckham, S. D. Cons. G. & E. Co.
 Clifton Peters, So. Cal. Ed. Co.
 C. S. Vance, L. A. G. & E. Corp.

Meetings

Commercial National Section Is to Meet in San Rafael

The Commercial National Section of the National Electric Light Association will hold a meeting at the Hotel Rafael, San Rafael, Calif., on Nov. 19-21. Chairman W. R. Putnam, vice-president and general manager of the Idaho Power Company, Boise, Idaho, will open the meeting and will preside. F. A. Leach, Jr., vice-president and general manager of the Pacific Gas and Electric Company, San Francisco, Calif., and president of the Pacific Coast Electrical Association, will welcome the members and guests and will assist in the general program. Members of the Commercial National Section and of the Commercial Section of the Pacific Coast Electrical Association will be in attendance. A. M. Frost, chairman of the Commercial Section of the Pacific

COMING EVENTS

Commercial National Section, National Electric Light Association—

Hotel Rafael, San Rafael, Calif.
Nov. 19-21, 1924

Electrical Supply Jobbers' Association—

Hotel Cleveland—Cleveland, Ohio
Nov. 19-21, 1924

Coast Electrical Association, will assist in the deliberative and social arrangements and will hold meetings of that section at his discretion.

All general and committee meetings will be held in the Hotel Rafael and the complete schedule of meetings will be posted on the bulletin board. The tentative schedule is as follows:

- Nov. 19—General conference—9:30 a.m. to 10:20 a.m.
Lighting committee—10:30 a.m. to 12:30 p.m.
Power committee—2 p.m. to 5:30 p.m.
Appliance committee—2 p.m. to 5:30 p.m.
- Nov. 20—Customers' relations committee—9:30 a.m. to 12:30 p.m.
Electric cooking and heating committee—9:30 a.m. to 12:30 p.m.
Electric domestic refrigeration committee—2 p.m. to 5:30 p.m.
Transportation committee—2 p.m. to 5:30 p.m.
- Nov. 21 General conference—9:30 a.m. to 12:30 p.m.
Section's executive committee—2 p.m. to 5:30 p.m.

There will be ample provision for sports, and arrangements have been made for the courtesies of the Marin Golf Club for those who wish to play. Tennis courts of the Hotel Rafael will be available for those who wish to engage them, and special entertainment features will be provided for the ladies. The San Rafael Rotary Club has donated prizes for a ladies' bridge party, and other ladies' entertainment will be furnished under the direction of Mrs. Sawyer, president of the Women's Club of San Rafael, Mrs. H. M. Crawford and Mrs. H. G. Ridgway. In addition to the prizes mentioned above, the Pacific Coast Electrical Association has also donated several prizes for winners in the ladies' contests.

Robert Sibley, executive manager of the California Alumni Association, will speak on the World Power Conference held in London, Eng., July, 1924, and other speakers will be announced later. On Friday evening, Nov. 21, there will be an informal banquet at which C. T. Hutchinson, editorial director of the Journal of Electricity, will be toastmaster.

A special feature of the meeting will be an excursion to the top of Mt. Tamalpais, which will be held on the afternoon of Nov. 21. Those making the trip will leave the hotel at 3 p.m. and will have an opportunity to view the sunset from the top of the mountain. After viewing the San Francisco Bay area in the early evening, when the lights are on, the party will return to the hotel in time for the banquet, which will be served at 8:30 p.m. Tickets to the banquet will be \$3 each.

On Saturday, Nov. 22, a special automobile tour of San Francisco, with the Pacific Gas and Electric Company as host, will be given to the visitors from the East, and luncheon will be served at one of the cafes. From the cafe, automobiles will take the guests to the ferry in order that those who wish may proceed to the California-Stanford football game at Berkeley. Automobiles will meet the guests on the Oakland side of the bay and will transport them to the game. After the game the same machines will carry the members back to the ferry in Oakland or to the ferry for San Rafael.

Registration for the meeting will be under the direction of D. C. Ray, manager of the bureau of public relations of the Pacific Gas and Electric Company, and all in attendance will be required to register. All entertainment features except the banquet on Nov. 21 will be complimentary to Eastern members and guests. Members of the Pacific Coast Electrical Association, however, will pay the registration charges to be announced later.

Sacramento Contractors Meet Power Company Officials

The second joint meeting of power company representatives and Sacramento, Calif., contractor-dealers was recently held at the office of the Electrical Contractors' and Dealers' Association of Sacramento. The meeting was for the purpose of discussing problems of mutual interest and concern. As in the case of the first meeting, many matters were brought up and considerable was accomplished in the way of better relationship and procedure. Among those present were: C. V. Schneider, George C. Foss, J. C. Hobrecht, T. L. Nightingale, Clifford Prudhomme, L. M. McGinnis, Carl F. Vining and E. M. Miller, of the Sacramento association; J. W. Wrenn, of the Great Western Power Company, San Francisco; R. T. Stephens and Thomas Watson, of the Pacific Gas and Electric Company, Sacramento, and Walter F. Price, executive secretary of the California Electragists, San Francisco.

N.E.L.A. Prime Movers Committee Serial Report Published.—"Boilers, Superheaters and Economizers," the serial report of the Prime Movers Committee (1923-1924), Technical National Section, National Electric Light Association, has been published and is being sent to member companies.

Sacramento Valley Electrical Society Elects Officers

At the recent annual election of the Sacramento Valley Electrical Society, Sacramento, Calif., the following officers were chosen for the ensuing year: president, G. T. Lundlee, G. T. Lundlee Company; secretary, Roy N. Phelan, Electrical Contractors' and Dealers' Association; treasurer, W. L. Hill, Pacific Gas and Electric Company; directors, W. H. Evans, Sacramento Northern Railroad; F. H. McGinnis; A. H. Hobbs, Pacific Telephone & Telegraph Company. These directors will serve for two years. The directors whose terms do not expire for another year were: W. J. Delehanty, General Electric Company; F. D. Bennett, Radio Equipment Company; C. H. Carter, C. H. Carter Company.

The meeting was addressed by Albert H. Elliot, secretary of the Pacific Coast Electrical Supply Jobbers' Association, San Francisco, Calif., who spoke on "Play the Game Straight." Following this, a short, comprehensive film, "Electrical Transmission of Speech," was shown. This was supplied by the Pacific Gas and Electric Company, Sacramento, Calif.

COMING PACIFIC COAST ELECTRICAL ASSOCIATION MEETINGS

Executive Committee, Commercial Section—
Hotel Rafael, San Rafael, Calif.
Nov. 19-21, 1924

Appliance Bureau—Commercial Section—
Hotel Rafael, San Rafael, Calif.
Nov. 19-21, 1924

Customer Relations Bureau, Commercial Section—
Hotel Rafael, San Rafael, Calif.
Nov. 19-21, 1924

Electric Cooking and Heating Bureau, Commercial Section—
Hotel Rafael, San Rafael, Calif.
Nov. 19-21, 1924

Lighting Bureau, Commercial Section—
Hotel Rafael, San Rafael, Calif.
Nov. 19-21, 1924

Power Bureau, Commercial Section—
Hotel Rafael, San Rafael, Calif.
Nov. 19-21, 1924

Transportation Bureau—Commercial Section—
Hotel Rafael, San Rafael, Calif.
Nov. 19-21, 1924

Purchasing and Stores Section—
Del Monte, Calif.
Nov. 20-21, 1924

Publicity Section—
527 Rialto Building, San Francisco, Calif.,
Nov. 21, 1924

Technical Section—
San Francisco, Calif.
Jan. 7-9, 1925

P.C.E.A. Technical Section Meetings Scheduled.—A three-day series of meetings is to be held in San Francisco, Calif., Jan. 7-9, by the Technical Section of the Pacific Coast Electrical Association, under the chairmanship of P. O. Crawford. The place of meeting has not yet been announced.

Publicity Section to Hold Meeting.—The Publicity Section of the P.C.E.A. will meet in the office of the secretary of the association, 527 Rialto Building, San Francisco, at 2 p.m. on Nov. 21. The meeting has been called by A. C. Joy, chairman of the section.

Manufacturer, Dealer and Jobber Activities

The Western Electric Sign Company, Inc., Seattle, has been organized by James C. Zancker, for eight years Northwest manager for the Federal Electric Company, and Carl E. Nord, who formerly headed the Nord Company, sign manufacturers. The firm has headquarters at 535 Central Building.

The L. C. Warner Company, 307½ Pine Street, Portland, Ore., has recently opened a wholesale store for Savage washing machines, and radio supplies, with H. S. Allen as branch manager.

Woodard, Clarke & Company, one of the oldest drug stores in the city of Portland, Ore., has sold its retail business to the Stout, Lyons Drug Company. A complete line of electrical appliances and lamps is carried in the electrical department of the concern which is managed by H. E. Cornthwaite.

The Square D Company, Detroit, Mich., has produced a new device called the Wigginton Voltage Tester. The device is built for rough usage, requires no lamps, is self-contained and indicates voltages on any line up to 550 volts, either a.c. or d.c.

Lewis & Watts, who for the past four years have specialized in the Northwest on the design and construction of power plants and who also have acted as representatives of several Eastern manufacturers of power plant equipment, have opened offices in the Rialto Building, San Francisco, Calif. Ralf E. Webber will be in charge of this office.

The Rockwood Manufacturing Company, Indianapolis, Ind., has announced that seven Western warehouses have been established for delivery of its products. Stocks are now carried at Los Angeles, San Francisco, Calif., Seattle, Wash., Salt Lake City, Utah, and Denver, Colo.

The G. & W. Electric Specialty Company, Chicago, Ill., has just issued Bulletin No. 24. This is a pocket size booklet descriptive of installations of G. & W. potheads. The booklet also contains interesting information for engineers.

The Burndy Engineering Company, Inc., New York City, has just issued an interesting booklet on Burndy T-Connectors for tubing cables and solid buses. The booklet contains detailed information relative to these devices and also interesting engineering data on copper tubes, solid round copper rods and bare concentric cables.

The Domestic Electric Appliance Company has been established in Colorado Springs, Colo., by Frank Volger, commercial manager of the Colorado Springs Light, Heat & Power Company. The new company will be located at 128 North Tejon Street and will be in charge of H. H. Stover. The central station company operating in the city has closed out its merchandising department, owing to the early municipal operation of the power plant there.

The Bryant Electric Company, of Bridgeport, Conn., has recently placed on the market a combination bakelite pendent switch and appliance outlet for use in connection with lighting fixtures which are out of convenient reach.

The Westinghouse Electric & Manufacturing Company has brought forth an interesting 24-page booklet describing and stating the application of various varnishes, insulating compounds and finishing materials. The booklet will be furnished upon request for Folder 4249-B direct from the factory.

The Roller-Smith Company, New York City, has recently issued Bulletins Nos. 100, 200, 430 and 550, descriptive of electrical instruments for signal system testing, portable direct-reading, rail bond testers, direct current switch-board instruments, and relays.

The O. C. White Company, Worcester, Mass., has just brought out a new type of universally adjustable joints known as the White Style FL, which enables a contractor-dealer to use a spot reflector as a spot or flood light for any of the numerous requirements of this particular type of lighting.

Partrick & Wilkins Company, Philadelphia, Pa., has just issued catalog No. 42 on annunciators, electrical household goods, signaling apparatus and systems. The catalog is fully illustrated and is prepared with special reference to the contractor-dealer.



Herbert Metz, advertising manager of the New York supply department of the Western Electric Company, is listening in breathless horror to the lurid tale of the Wild and Woolly West as told by A. C. Cornell, Denver manager for the same company. The two gentlemen are returning from the convention of the Rocky Mountain division of the N.E.L.A. held at Colorado Springs, Colo.

C. F. Braun & Company, Alhambra, Calif., are distributing copies of their booklet No. 109 descriptive of Braun strainers.

Altorfer Bros. Company, Peoria, Ill., has added a vacuum type machine to its line of electric washers. This is said to give the company a complete line of all types of electric washers.

Curtis Lighting, Inc., Chicago, Ill., has prepared a series of ten-minute talks on the subject of school, store, church, office, theater, outdoor and home lighting; that has been broadcast from Station WQJ, Chicago. It is planned to broadcast a similar series from Salt Lake City, Utah, Los Angeles and San Francisco, Calif., and Portland, Ore.

The Erbes Resonator Company, Everett, Wash., has purchased the plant of the Everett Pattern Works at 2822 Baker Avenue and will immediately convert the two-story structure into a factory for the manufacture of Erbes Voicer, a loud speaker cabinet which is designed to accommodate any radio set. The company is giving a series of free demonstrations and entertainments to the public to display its product.

Harry J. Martin, National Carbon Company, Seattle, Wash., and president of the Seattle Electric Club, has moved his headquarters from 1206 L. C. Smith Building to Suite 1301-2 in the same building.

The Monrovia Electric Shop has been opened in Monrovia, Calif., by J. E. Donahue, formerly in the motor department of Fairbanks, Morse & Company, Los Angeles, Calif., and James Fairfield, formerly electrical contractor of Alliance, Neb. The company will do a general wiring and appliance sales business.

The Sangamo Electric Company, Springfield, Ill., has issued "Sangamo Amperehour Meters for Train-Lighting Systems," a pamphlet dealing with its meters Types N, NCI and NCR, with a special section devoted to "Head-end Systems" and "Straight Storage Systems."

The General Electric Company has designed a new automatic starting compensator, CR-7051-J1, for squirrel cage induction motors. This motor starter is for remote control of constant speed two- or three-phase squirrel cage motors up to 600 volts for general applications driving line shafting, pumps, compressors, blowers, conveyors, etc. With it such equipments may be started or stopped from a distance by means of one or more small hand-operated push-buttons or snap-switches located within convenient reach of the operator or automatically operated by pressure governor, float switch, thermostat, etc. Various new and important features include definite and adjustable time acceleration by means of a new induction type relay; positive overload protection of the complete equipment through a double pole, inverse time, temperature overload relay; easy access to all parts provided by back-to-back mounting of starting and running magnetic contactors in sheet steel enclosing case. A conduit box at the back has several knock-outs and furnishes entrance for all power and control wires to the motor starter.

Maydwell & Hartzell, Inc., San Francisco, Calif., has consolidated its Los Angeles office, formerly located in the Transportation Building, with its new warehouse at 455 Colyton Street, that city. Complete stocks of pole line construction materials manufactured by companies which the firm represents will be carried in the Los Angeles warehouse for better service to customers. E. S. Condon is in charge of the branch. He is assisted by William A. Lyons, formerly connected with the Pacific Electric Railway Company of Los Angeles. Thomas C. McClure, until recently with The Pacific Telephone & Telegraph Company, Los Angeles, has also joined the staff.

The Electric Corporation, Los Angeles, Calif., formerly Westinghouse Lamp Company distributors, has recently become distributor of Peerless National Mazda lamps.

Personals

E. Kower, of the Electric Storage Battery Company, San Francisco, Calif., was elected president of the Electric Transportation Association of that city at the recent annual election. Mr. Kower studied electrical engineering at the University of California and later continued his study while employed by



E. KOWER

the Sierra & San Francisco Power Company. During his service with that company he occupied variously the positions of boilermaker's helper, operator, draftsman and substation construction foreman. During the World War he was assistant to the Expert Electrical Aid at the Mare Island Navy Yard, Mare Island, Calif. Following the war Mr. Kower did evaluation work on the boiler plant equipment of the Standard Oil Company in conjunction with Ford, Bacon & Davis. Since 1920 he has been associated with the Electric Storage Battery Company devoting the major portion of his time to the application of storage batteries to motive power problems.

L. R. Sheeley, formerly chief clerk at Yakima, Wash., for the Pacific Power & Light Company, has resigned to accept a position as superintendent of the Bend Water, Light & Power Company, Bend, Ore. Mr. Sheeley has been with the Pacific Power & Light Company in the new business and accounting departments since 1910, having been chief clerk at Sunnyside, Wash., and Pendleton, Ore., prior to his transfer to Yakima in 1917.

W. D. McDonald, manager of the Seattle, Wash., branch of the Westinghouse Electric & Manufacturing Company, won the Blethen Trophy in the final match of the annual electric tournament of the Seattle Golf Club recently.

George M. Boyd, illuminating engineer of the Westinghouse Electric & Manufacturing Company, recently addressed the Electric Club of Seattle, Wash., on the subject of "Light Control," at a meeting at which **John J. Hayes**, of the Westinghouse Electric & Manufacturing Company, presided.

R. L. Hearn, assistant chief engineer of The Washington Water Power Company, Spokane, Wash., attended the meetings of the Technical National Section of the National Electric Light Association held at St. Louis, Mo.

Arthur E. Rowe, sales manager of Garnett Young & Company, San Francisco, Calif., recently spent several days in Sacramento, Calif., on business in connection with his firm.

P. P. Pine, of the San Diego Consolidated Gas & Electric Company, San Diego, Calif., and secretary of the Electric Club of San Diego, was a recent Los Angeles visitor.

N. G. Harvey, of the Illinois Electric Company, Chicago, Ill., was recently in San Francisco, Calif.

H. H. Courtright, president of the Valley Electrical Supply Company, Fresno, Calif., was recently in San Francisco.

E. B. Criddle, of the Southern Sierras Power Company, Riverside, Calif., was a recent visitor to San Francisco on business for his company.

C. V. Schneider of the Electrical Supply Company, Sacramento, Calif., president of the Electrical Contractors and Dealers' Association of that city, was a recent visitor to Baystate near Plymouth, Calif.

Brice B. Burkett, of the Westinghouse Electric & Manufacturing Company, Seattle, Wash., was recently in San Francisco, Calif., on business.

A. F. McCallum, of the Westinghouse Electric & Manufacturing Company, Denver, Colo., was recently in San Francisco, Calif.

Colin B. Kennedy, of the Colin B. Kennedy Company, St. Louis, Mo., was recently in San Francisco, Calif.

J. L. Kline, president and manager, Western Light & Fixture Company, wholesale electrical jobbers of Los Angeles, Calif., just recently returned from the Hawaiian Islands. Mr. Kline was visiting there as a member of the Los Angeles Chamber of Commerce excursion to Honolulu and reports business very favorable in that region.

Walter F. Price, executive secretary of the California Electricists, San Francisco, Calif., recently spent some time in Sacramento in connection with association work. He attended a meeting of the Electrical Contractors' and Dealers' Association with the power companies.

Elmer B. Read, manager of the radio department, Illinois Electric Company, Los Angeles, Calif., has just returned from a two months' visit to Arizona and southern California cities, where he has been in the interests of the company.

S. Herbert Lanyon, Pacific Coast representative for Lapp Insulator Company, M. H. Dietrick Company and other Eastern factories, has just returned from a trip to the Northwest in the course of which he opened a sales office in Portland, Ore. The northern office is located in the Board of Trade Building and will be in charge of **C. R. Currier** who has been connected with Mr. Lanyon for some time in the capacity of a sales engineer.

J. E. Donahue, formerly in the motor department of Fairbanks, Morse & Company, Los Angeles, Calif., and **James Fairfield**, formerly electrical contractor of Alliance, Neb., have opened a general wiring and appliance sales store at 148 East Orange Street, Monrovia, Calif.

Otto Demmert, of The Demmert Company, manufacturers' agents of Los Angeles, Calif., has left for a three weeks' visit to various Eastern centers. Mr. Demmert went to Washington first, where he interviewed the supervisor of architecture of the U. S. Government in regard to various installations on the Pacific Coast. He will afterwards go to Philadelphia where he will attend a conference of electrical engineers of the Cutter Electrical Manufacturing Company, manufacturers of the ITE Circuit Breakers. From Philadelphia Mr. Demmert will go to New York City to look after various other lines which he expects to represent on the Pacific Coast. From New York he will then go to Pittsburgh, Chicago and Los Angeles.

Harry Burgess, formerly of Toledo, Ohio, and **R. C. Murray** have organized the B. & M. Electric Company and will be located at 1420 South Second Street, Arcadia, Calif. They will specialize on wiring and contracting.

William A. Lyons, until recently in the purchasing and stores department of the Pacific Electric Railway Company, Los Angeles, Calif., has become a member of the sales force of the Los Angeles office of Maydwell & Hartzell, Inc., as assistant to E. S. Condon, manager.

H. T. Plumb, engineer of the Denver, Colo., and Salt Lake City, Utah, offices of the General Electric Company, was a recent visitor to Pasadena and Los Angeles, Calif., attending the convention of the American Institute of Electrical Engineers. While in southern California Mr. Plumb delivered a very interesting address before the Electric Club of Los Angeles.

J. W. Wrenn, range sales manager of the Great Western Power Company, San Francisco, Calif., recently spent several days in Sacramento, Calif., on business.

T. P. McCrea, secretary of the Los Angeles Gas & Electric Corporation, Los Angeles, Calif., has been elected to a directorship in that company. In 1893 in the capacity of accountant Mr. McCrea entered the service of the Los



T. P. MCCREA

Angeles Lighting Company and the Los Angeles Electric Company. His rise has been rapid, and he has occupied successively the posts of auditor, purchasing agent, assistant secretary and secretary. The latter position he has held for the last eight years.

J. D. Nicholson, who for the past five years has been manager of the electrical department of the Mine & Smelter Supply Company's Salt Lake City branch, has been appointed assistant manager of that company's Denver office.

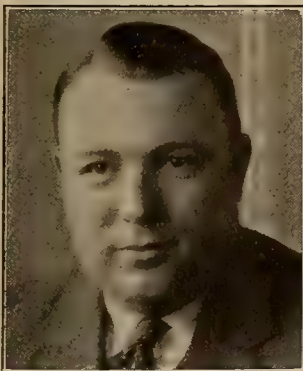
H. F. Hartzell, vice-president and general manager of Maydwell & Hartzell, Inc., San Francisco, Calif., recently made a trip to Los Angeles in connection with the expansion of the company's branch in that city.

E. M. Cox, proprietor of the Claremont Electric Company, San Bernardino, Calif., has moved to larger quarters at 131 Yale Avenue, that city, where he will continue his complete stock of appliances and, in addition to wiring, will represent Washer Wilson.

George A. Gray, president and manager of the George A. Gray Company of San Francisco, Calif., was a recent visitor to Los Angeles.

A. E. Peat, of the San Joaquin Light & Power Corporation, Fresno, Calif., was a recent visitor to San Francisco.

Gaylord B. Buck, recently appointed manager of the electrical merchandising division of the Public Service Company of Colorado, Denver, Colo., in the reorganization of its commercial department, was until his transfer the manager of the new business department of the Durham, N. C., Public Service Company, another subsidiary of the Doherty organization. Mr. Buck is a native of Mt. Vernon, Ill., and his first association with a utility company was in 1910 when he entered the employ of the Citizen's Gas, Electric & Heating Company of that city as a trouble shooter. Later he became cashier of the company and in 1913 he was appointed a representative in the new business department of the same company. The following year he became manager of the department and was transferred to a similar position with the City Light & Water Company, Amarillo, Tex., where he remained until 1917. Through another transfer he became new business manager of the Durham Traction Company which later was



GAYLORD B. BUCK

enlarged into the Durham Public Service Company. He was a member of the Rotary Club in that city. Since his arrival in Denver he has taken an active interest in civic affairs and also in the operation of the Electrical Cooperative League in that city.

Carl E. Johnson and **Harry G. Steel**, vice-president and president respectively of the U. S. Electrical Mfg. Co., Los Angeles, Calif., have been making an extended visit to Eastern industrial centers in the interest of their company which makes the "U.S. Motor."

Irvin L. Weber, electrical engineer, Seattle, Wash., recently appeared before the Electric Club of Seattle, and discussed the subject of "Filtered Sunshine and Better Home Lighting."

Thomas C. McClure, formerly connected with the Western Electric Company, Omaha, Neb., and for the past five years outside plant engineer for the Pacific Telephone & Telegraph Company, Los Angeles, Calif., has joined the staff of Maydwell & Hartzell, Inc., in the latter city.

J. E. Crilly, of the Western Electric Company, San Francisco, Calif., was a recent Los Angeles visitor.

R. C. Moeller, general manager of the Collyer Insulated Wire Company, Providence, R. I., has recently spent some time with Allied Industries, Inc., San Francisco, Calif., Pacific Coast representatives of the factory.

G. B. Kirker, manager transportation division, Westinghouse Electric & Manufacturing Company, Los Angeles, Calif., has just recently returned from an extended trip East in the interests of his company. He visited the factory at Pittsburgh, Pa., also the New York City and Atlantic City offices.

E. O. Shreve, manager, General Electric Company, San Francisco, was a recent visitor in Sacramento, Calif. While there he addressed the members of the Rotary Club at their weekly luncheon on the development of the electrical industry.

Victor W. Hartley, executive secretary, California Electrical Cooperative Campaign, was a recent visitor to Los Angeles, looking after the interests of the Home Lighting Contest in that section.

Andrew G. Orear, manager of the Westinghouse department, Illinois Electric Company, has just recently returned from a three weeks' trip to the Arizona territory, where he was looking after the interests of the company.

A. T. Richardson, of the Wholesale Electric Company, San Francisco, Calif., attended the meeting of the Masonic Grand Lodge held at Los Angeles, Calif., Oct. 14-17.

A. C. Holden, formerly sales manager of the electrical division of the General Railway Signal Company, Rochester, N. Y., has been appointed Pacific Coast manager of that company. Mr. Holden will make his headquarters at San Francisco, Calif., and will also represent the G. R. S. Products, Inc., of Albany, N. Y., a subsidiary of the former concern.

Heckert L. Parker, formerly sales promotion engineer of the Pacific Fire Extinguisher Company, San Francisco, Calif., has been made managing director of the Pacific Radio Trades Association. Mr. Parker will make his headquarters in the Monadnock Building, San Francisco. This office will also be headquarters for the Pacific Radio Exposition which is held under the auspices of the association.

George A. Campbell, manager of the Truckee River Power Company, Reno, Nev., attended the meeting of Stone & Webster property managers held at Boston, Mass.

J. A. Ramsey, formerly assistant sales manager, National Carbon Company, San Francisco, Calif., has been appointed Pacific Coast manager of the radio department of the Pacific States Electric Company in that city, succeeding Ellery W. Stone, now president of the Federal Telegraph Company. Mr. Ramsay is well known in the electrical industry, especially to radio "fans," as he has delivered a series of talks on radio batteries and kindred subjects that have been broadcast by station KLX. Among his other duties, while with the National Carbon Company, was the writing of general sales letters to jobbers and dealers in eight West-



J. A. RAMSEY

ern states and in the Orient. His acquaintance with the field, his knowledge of the line and his former training should be of invaluable assistance to him in his new position. Born in California in 1891, Mr. Ramsey was graduated from the University of California with the class of 1917. During the World War he served in the Field Artillery and received a commission as first lieutenant.

Harold M. Pomeroy, secretary and treasurer of the J. G. Pomeroy Company, Los Angeles, Calif., was in San Francisco recently on personal and company business, the former including attendance at a football game. The Pomeroy company represents Rome Wire Company, Edwards Mfg. Co., and other well known electrical manufacturers.

Obituary

Robert Thompson, of the firm of Thompson & Castleton, Inc., electrical contractors and dealers, died at his home in Seattle recently after a year's illness. Mr. Thompson was 42 years of age, and was a pioneer in sawmill electrification work and electrical sluicing operations. Mr. Thompson was a member of the Electric Club of Seattle, the Engineers' Club and the American Institute of Electrical Engineers.

D. D. Robinson, foreman at North Tower substation of the Pacific Gas and Electric Company, San Francisco, Calif., was electrocuted while working on high tension lines during a recent storm.

Trade Outlook

San Francisco

The result of the national election has produced here, as elsewhere, a general feeling of confidence and optimism. This has been increased in the electrical industry by the decisive defeat of the California Water and Power Act, tantamount to a vote of confidence in the private power companies, and continuation of the extensive program mapped out for betterments is assumed. Dealers report an improved market for vacuum cleaners and washing machines. Radio business is excellent, with an increasing call for the more expensive sets. A steady demand from dealers for antenna wire and insulators is reported. Intensive campaigns waged by jobbers and dealers have resulted in good lamp business. Collections are good.

Building continues at a steady pace. The announcement of the letting of a contract for a new central office building in the Pacific-Bay View district to be erected for the Pacific Telephone & Telegraph Company, and the issuance of a permit for the construction of a 15-story annex to the Clift Hotel should be of interest to electrical contractors.

Heavy rains have brightened the outlook in the surrounding territory, and this in turn is being reflected in San Francisco and the Bay district. Christmas buying is getting under way, and, in general, the outlook is good.

Los Angeles

The real estate market in this territory has shown signs of strengthening during the month. Industrial production has remained steady, and the improvement of the power situation has reduced to a minimum the inconvenience to which some industries were subjected during the early part of the summer. The petroleum output in the Los Angeles basin remains practically constant.

The wholesale and jobbing trade has been stimulated by the fall buying movement, and this has in turn been reflected in the increase in business of the manufacturers. Retail trade has been steady in the metropolitan district. This has been particularly true in the electrical retail business, some retail stores reporting conditions greatly improved over the same period of last year, and there has been considerable increase in the first part of November over the month just past. Radio sales have increased considerably, and in some cases demand is so great that it is difficult to secure an adequate supply of some makes of radio sets.

Building activities for the last two weeks show signs of improvement over the same period of last month; however, they are somewhat below the same period of last year.

Denver

Substantial increases have been noted in central station earnings, and with renewed confidence as the result of the election considerable additional indus-

trial activity is promised. Oil developments are progressing rapidly in every section of the state, and general business is being stimulated accordingly.

Building authorized in Denver in October amounted to \$2,769,200, which brought the total of building in Denver this year to the unapproached sum of \$22,422,550, an amount almost two million larger than the total for the entire twelve months of 1923, the record-breaking year heretofore. Permits issued during the first part of November, especially for dwellings, continued at about the same rate as in the previous month, and with splendid weather prevailing thus far additional records are anticipated. Construction is expected to start soon on two new hotels, each costing over a million dollars, sites for which have already been secured. The volume of building, particularly that of residential construction, naturally reacts favorably on the sales volume of electric lighting fixtures, household equipment and appliances.

Another index of the satisfactory fall business being experienced in this region is the record number of car loadings reported in October. Figures from all the railroads indicate an increase of 12,000 over the same month last year.

Salt Lake City

Merchants are looking forward to a larger volume of Christmas buying this year than has been the case for some time. Electrical gifts will be strongly featured again this year, and electrical dealers anticipate a very favorable buying attitude on the part of the general public.

The mining industry is still in a thriving condition, with increased tonnage being reported for practically all of the large mines. State banks are in better condition than they have ever been in the history of Utah, according to the last report of the state bank examiner. Collections have shown some improvement during the past few weeks. Building permits for Salt Lake City during October this year showed a fair increase over October, 1923.

The condition of the average Utah and Idaho farmer for the present year is twenty-five per cent better than last year, according to close observers of agricultural and financial conditions in this section. In addition to other standard farm products, from 19,000,000 to 20,000,000 lb. of alfalfa seed will be produced in Utah this year, an increase of twenty per cent over last year's production. A conservative estimate of the income for this crop is placed at from \$2,900,000 to \$3,300,000.

Seattle

Electrical dealers report that sales volume of electrical equipment, devices and supplies are holding up fairly well, with slight tendency to quietness in some lines. The movement of Christmas goods to dealers and central stations is increasing rapidly, merchandise including electric ranges, irons, heaters, percolators and gift ware. There is

every indication that holiday trade will be heavy. Increasing interest is being shown in electric home heating equipment, and several large contracts have been placed for electric furnaces during the past month. Stocks are adequate, and prices are holding firm.

Despite inclement weather, building construction has increased in volume during the past two weeks. Completion of several large building projects has caused a surplus of building workmen, but new projects planned are expected to absorb these. Reports from other cities in the Puget Sound district indicate considerably more building than at this time last year. Unemployment is more in evidence than it has been for several months, although the prospect is not serious.

Reports from the lumber industry indicate that business is holding up well, with increasing demands from Eastern sources. Reports for the month of October showed shipments of sixteen per cent above new business.

Portland

Retail sales are rather slow, and central station business is not up to expectations. Electric ranges are moving well, however, and electric heaters are also being sold in quantity. Generation in the plants around Portland was nearly ten per cent greater during October this year than during the same month in 1923. Consumption of energy in the lumber and wood-working industry in October showed a loss over the same period of a year ago, while manufacturing generally showed a substantial increase.

Lumbering is reported as inactive, but fairly steady. Dealers are running on low stocks, depending on the mills to meet shipping requirements promptly. Quotations are many, but the orders are few.

Building, particularly home construction, is going ahead, and many new residences are being started in all parts of the city. Indications are that there will be practically no let-up in house-building throughout the winter months.

The freight movement to Europe is unusually heavy. The principal commodities are lumber, wheat and fresh apples, the latter being carried largely in refrigerator ships. Exports to Atlantic and California ports are light.

Spokane

As a result of the election, confidence in the future has been stimulated in all lines in this territory.

The local packing plants continue operating at a level practically the same as last year, with some increase noted in the case of the smaller plants. The lumber market continues dull, with stocks of rough lumber depleted and the stage set for a resumption of activity.

A series of heavy rains beginning the last week in October has had a good effect upon the morale of the agricultural interests, justifying the expectation of a good winter wheat crop. The group of local dairies is enjoying an increase in business as compared with a year ago, with prices firm and a tendency to increase.

Recent advances in price of lead have had the effect of stimulating trading on the local mining exchange. The mining conditions in the Coeur d'Alene district of Idaho and in British Columbia are excellent, and no decline is anticipated.

Journal of Electricity

Devoted to the Economic Production and Commercial Application of Electricity
IN THE ELEVEN WESTERN STATES



My Sidewalk Picture-Gallery

I manage the window and sign lights for many merchants. Good window lighting and my regular management together made some streets so attractive at night that mere street lighting became insignificant.

The Cheapest of All Advertising

The retailer who neglects to show actual goods in his own windows, properly lighted, *every night*, throws away the cheapest and best advertising available to him and retards the development of his store's location. HE NEEDS ME.

I am a TORK CLOCK

I turn electric lights on and off regularly.

Wind me once a week and I do it every day at the hours you set.

My first cousin, TORK TIMER, turns 'em on and off only once whenever you set him. But you should see how quick you can set him.

—and you never have to wind him at all.

Which one of us do you need?

3 Watts per Passerby

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Journal of Electricity

Devoted to the Economic Production and Commercial Application of Electricity
IN THE ELEVEN WESTERN STATES

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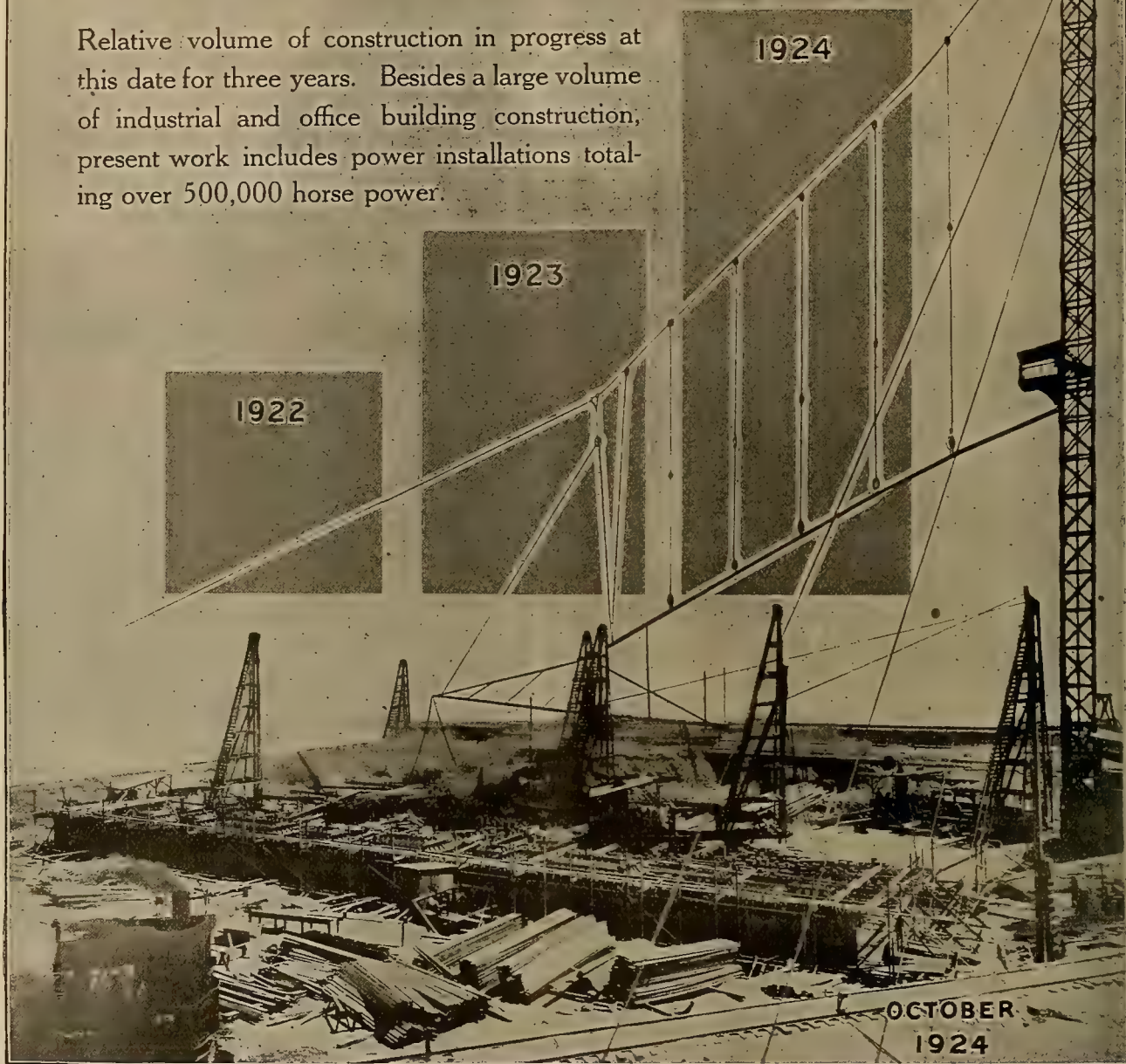
Coal Age

Electrical Merchandising

Power

WORK IN PROGRESS

Relative volume of construction in progress at this date for three years. Besides a large volume of industrial and office building construction, present work includes power installations totaling over 500,000 horse power.



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PHILADELPHIA, Real Estate Trust Bldg.



The 1925 N.E.L.A. Convention

AS announced in the Nov. 15 issue of the Journal of Electricity, the 1925 convention of the National Electric Light Association will be held in San Francisco during the week of June 15. Naturally President Griffith's choice was received with enthusiasm by the utilities in that city, as it was in accord with the invitation extended by the Pacific Coast Electrical Association at its Coronado convention. Everyone will appreciate the difficult position President Griffith was in when he chose a city other than Portland. Bound by home ties and cognizant of the desire of the Portland civic and commercial associations to have the convention held in that city, he selected San Francisco only after consulting with the other officers of the N.E.L.A., who felt that the hotel accommodations in Portland would be inadequate to care for the large influx of delegates in addition to the regular number of summer tourists. President Griffith is to be commended for the broad-minded attitude he adopted in selecting any other than his home city.

In times past the Pacific Coast cities which have been fortunate enough to entertain delegates to the N.E.L.A. conventions have established enviable reputations for their hospitality. The year 1925 will prove no exception. Every utility in the two Pacific Coast geographic divisions of the association must realize that the obligations of hosts do not fall alone upon the central stations in the San Francisco Bay region. The duties of entertaining the Eastern visitors are mutual obligations to be assumed alike by every utility. If the 1925 convention is to go down as the most successful in the history of the association, everyone must cooperate to make good the saying, "The West knows how."

National Commercial Section Meetings

CALIFORNIA was honored during the week ended Saturday, Nov. 22, through its selection as the meeting place for the second session of the Commercial Section of the National Electric Light Association. The sessions were held at San Rafael under the general guidance of Chairman W. R. Putnam, vice-president and general manager of the Idaho Power Company, Boise.

It is the custom within the N.E.L.A. that the meetings of committees shall be held on the Atlantic Coast, the Pacific Coast and the Middle West as nearly as is possible, in order to afford an opportu-

nity for local men to participate in the discussions and further to emphasize in fact as well as in theory that the N.E.L.A. is truly a national organization representative of every section of the country and not confined to such activities as center about the general headquarters of the association in New York City. Such meetings as the one recently concluded in San Rafael do a world of good to the industry and to the men who participate. In fact, it has been stated that quite as much good is brought about by the informal conferences and discussions that take place between individual members and small groups as in the more formal discussions at the organized meetings.

Another feature that was particularly gratifying to the local men who were charged with the responsibility of making the arrangements was the number of members participating from localities remote from San Francisco. Los Angeles and Fresno, of course, were well represented, while members from Portland, Seattle and Spokane, as well as a number of men from Chicago and New York, also manifested their interest in the work of the Commercial Committee by their presence.

The discussions were spirited and interesting. Many important subjects received the attention of the various committees. On another page of this issue is a full and complete report of the convention proceedings. To those men who are interested in the commercial phases of the industry and who were not fortunate enough to attend the meeting, we recommend a careful study of this report. Undoubtedly they will be able to glean from it ideas which can be applied to their particular business.

Romance in the Electrical Business

THE other day a man in the electrical business, in talking of the grief that attended some of his operations, said, in effect, "I enjoy these difficulties. In fact, I get more pleasure out of the hours spent in my business than I do out of any of the rest of the twenty-four, not excepting those spent with my family—and I tell my wife that. I spend every spare minute here at my shop and office. I have no hobbies nor outside interests." This man has found romance in his business and is pursuing it assiduously.

Not long after this conversation, a friend (not by the way, in the electrical business) confided that his business bored him. He considered it a necessary evil, and spent as little time at it as he possibly

could. His spare time was divided between his family, in which he took much pleasure and great pride, and a number of absorbing hobbies, not the least among which was the expert building of furniture for his new house—a hobby far removed from any connection with his business. This man has not found romance in his business and is seeking it elsewhere.

Anyone could pick between these two the winner in the race of accumulating a fortune, but it will take a philosopher to determine which will be the happier and which will get the most out of life. Chesterton said, "The center of every man's existence is a dream," and if this is so, perhaps it is true that each will get as much from life as his capacity for appreciation will admit, since each pursues his dream with equal vigor. We cannot recommend either course, but suggest that somewhere between the two extremes lies the ideal. For, while it is true that many of the recognized best things in life are abstract and so not purchasable, it is likewise true that most of us require the happiness that comes with the possession of a few material things. Material things cost money, and we get more money by working better at our business. So it would seem that if we can somehow tie our business in with our dream, or, in other words, find romance in our business, we stand a better chance to prosper and to attain such happiness as accompanies prosperity.

The electric light and power business, in all its branches, is rich in romance. If you have failed to sense it, then perhaps you are ill suited to your task and should search further for a life's work. In any event, we predict you will enjoy reading George J. Kelly's article in this issue. Mr. Kelly is one that not only has caught and held for his own enjoyment the romanticism in our business, but also has been able to convey an image of that romanticism to multitudes of the general public, thus doing a great good for his company, and, for that matter, for the industry. In the current article he has written engagingly of the making of a publicity motion picture that has caught the public fancy, and in his story are the germs of ideas that others may wish to adopt.

Capitalizing the Better Home Lighting Contest

ONE of the major problems confronting the industry is to capitalize commercially the public interest that has been aroused by the Better Home Lighting Contest. A thorough and painstaking job has been done in educating the public, especially the home-owners, on the proper standards of home lighting. National and local advertising, in fact, the resources of the entire industry, have been used in this campaign. So great has been the investment, both in money and man power, that the feeling is general that the good work done by the contest should be followed up by a definite sales campaign during the coming year.

Before such campaigns are undertaken, there are certain facts which should be remembered. In the first place, the electrical industry made a definite

promise that the contest should not be touched by any commercial effort or atmosphere. The cooperation of the educational interests in making the campaign a success has been such a vital factor that to incur the suspicion or ill will of this group through the commercialization of the contest would be to preclude all possibility of future cooperation in similar undertakings.

During the discussions at the recent meeting of the National Commercial Section, a number of suggestions for capitalizing the contest were made. Intensive kitchen lighting campaigns without reference to the contest seem to be one means. Sales campaigns featuring portable lamps were also suggested. One central station executive proposed that speakers' bureaus be organized for keeping interest in better home lighting at its present pitch. Another suggestion was made that information on proper illumination be included in the curriculums of those schools best fitted to handle this subject.

However, whatever steps the industry takes in its endeavor to get returns from the contest, the greatest caution must be exercised to see that no reference to the contest is made in its sales campaigns.

Why Are Convention Banquets?

FEASTING of one kind or another plays a large part in the affairs of mankind. We read in history of Gargantuan repasts, of how Lucullus dined with Lucullus, and by way of antithesis of the Barmecide feast made famous in the Arabian Nights. Since an operation on the constitution of the United States has rendered further devotions at the shrine of Bacchus a useless sort of task to most of us, it is assumed that before long, people will learn to eat to live rather than to live to eat. Nevertheless, convention's decrees and even the decrees of conventions persist long after their demise has become at least somewhat overdue, all of which leads up to the more or less pertinent question, of what use, if any, is the convention banquet.

The place of the banquet in the convention scheme of things is generally at the tag end of a more or less perfect week when everyone is tired out from deliberations and unremitting attendance at meetings of one kind or another where abstruse and involved subjects are discussed in such a manner as to require a degree of concentration that is bound to produce a certain amount of brain fag. Therefore, when the delegates have become worn with delegating and the "con" has been entirely removed from conference, the suffering and perspiring delegates must perforce don their waiter's uniforms, sit through a more or less interminable table d'hôte and be bored by a speaker or series of speakers, to say nothing of a toastmaster, who tell them a lot of things that they do not care to hear and at a time when they would rather be making up their quota of sleep or possibly tripping the light fantastic to the more or less harmonious moans and sobs of the saxophone.

We have all sorts of societies for the prevention of one thing or another. One may not be cruel to children or to animals without coming within the pale of the law; why not then organize a society for the prevention of cruelty to convention delegates and for the suppression of the convention banquet? In this age of prevention one might go much farther and do a great deal worse.

A Handbook of Safety Rules

WITH several hundred pages in some of the safety orders issued by state commissions, it is out of the question for anyone to memorize the contents. The trained engineer must consult the book frequently for his own guidance, and the layman who would comply with its regulations must make a special study of its provisions. Even then, he will find that the language in many cases is technical and difficult for any but a specialist to understand. It is impossible in such a work to specialize too greatly even where rulings in a particular field might be more useful than the mere statement of fundamental principles. Minimum requirements alone are considered, of course, and no information may be obtained from this source as to the merits of the desirable installation above this standard.

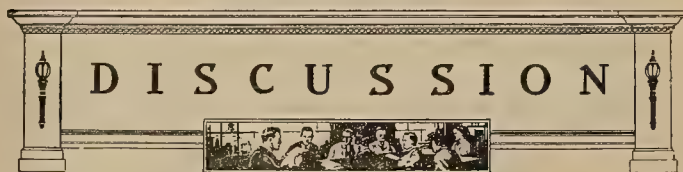
A code of safety orders, in other words, does not take the place of a handbook for popular use. There is more than one field in which such a handbook would be of advantage. The rural user of electricity, for instance, is often guilty of inferior electrical installation, from sheer ignorance of good practice. A bulletin which might be published in pamphlet form under the joint auspices of the Industrial Accident Commission and the insurance interests and which would give a set of simple rules for such installations would be of genuine value. Such a compilation would undoubtedly do much to cure the present more or less unsatisfactory conditions in rural installations.

California and the National Farm Survey

WITH the complete organization of the California Committee on the Relation of Electricity to Agriculture, that state is in a position to play an important part in the national study which is being made to determine to what extent electricity can be applied economically on the farm. In no section of the world has a greater use been made of electrical energy on the farm than in that commonwealth. Yet agricultural and central station authorities feel electricity will be of even greater service after careful study of the farmer's problems has been made.

As recounted on another page of this issue, the survey brings together central station representatives, manufacturers, the farmers themselves through the Farm Bureau Federation, the State University and the Railroad Commission. Already one important result has been accomplished in the establishment of relations between the electrical industry and the state university. Funds for conducting the present survey are being supplied by the

central stations while a member of the staff of the Agricultural College will act as executive secretary. However, the greatest result achieved will be a closer understanding between the central station and the farmer of their mutual problems.



Earliest Hydro Development in Idaho Constructed in 1887

To the Editor:

Sir: I notice that you have been publishing some brief accounts of early hydroelectric developments in the West, and it has occurred to me that you would be interested in a brief description of one of the pioneer developments in the Intermountain territory.

The first hydro development in southern Idaho of which I have any knowledge was installed near Boise in 1887. The water supply for this plant was taken from an irrigation ditch known as the Ridenbaugh Canal, and the wheels were operated under a head of 62 ft. The first installation consisted of two 15-kw. Edison direct-current generators. About 1889 or 1890 these machines were replaced with two 30-kw. machines of the same type. At various times during the decade following, additional capacity was added until finally the total installation consisted of six 30-kw. direct-current generators, of the type above mentioned, three Thompson-Houston arc lamp machines and one 100-kw. mono-cycle generator.



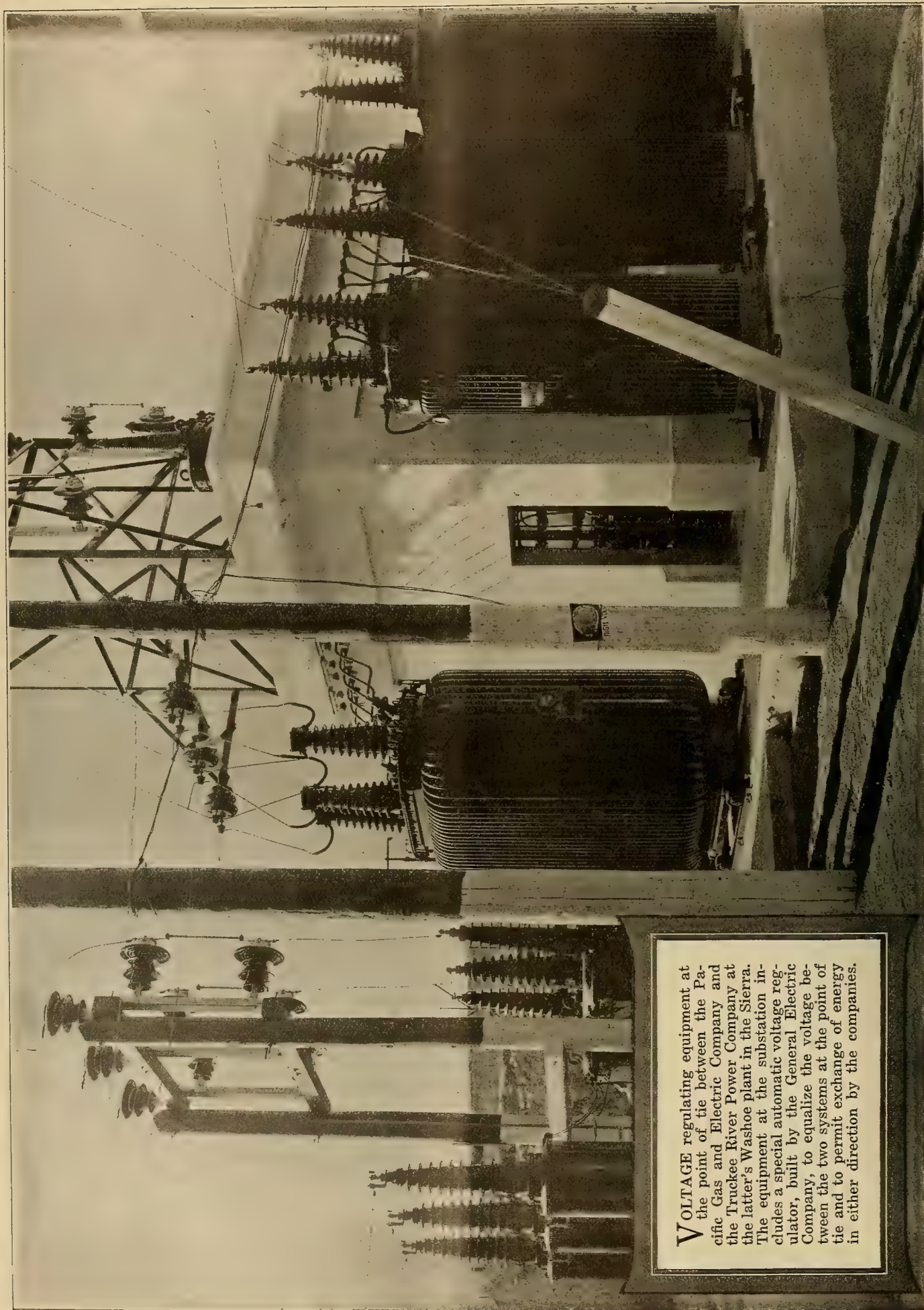
Building that housed the first hydroelectric plant in southern Idaho

This plant served the City of Boise and vicinity until about 1903, when the development of a larger plant on the Payette River rendered it inoperative. Thereafter it was closed down and has been subsequently dismantled.

The power plant building for this installation still is standing.

F. J. RANKIN,

Chief Engineer, Idaho Power Company.
Boise, Idaho, Nov. 20, 1924.



VOLTAGE regulating equipment at the point of tie between the Pacific Gas and Electric Company and the Truckee River Power Company at the latter's Washoe plant in the Sierra. The equipment at the substation includes a special automatic voltage regulator, built by the General Electric Company, to equalize the voltage between the two systems at the point of tie and to permit exchange of energy in either direction by the companies.

The Motion Picture—a Medium for Utility Publicity

By George J. Kelly

Land and Tax Agent, Portland Electric Power Company,
Portland, Ore.

THE production of motion pictures by utility companies for publicity purposes is not by any means a new idea in their general scheme of advertising. However, this publicity medium apparently is not used to advantage to the extent that it deserves, mainly on account of the difficulty of getting distribution through the motion picture houses after the film has been produced. Any film of an advertising nature is looked upon with disfavor by the exhibitor at the big downtown theater, and this feeling extends even into the smallest suburban show house. Not that advertising space cannot be purchased under the guise of news weeklies or educational pictures, but in general it is true that direct advertising is barred from the movie world.

The reason for the antagonism of the exhibitor to advertising matter on his program is that he knows his audience resents being compelled to see such matter when it has paid its admission money to be entertained. A purely advertising film, even if it were possible to have it shown, would do more harm than good to the subject advertised. Thus, after such a film has been produced at a good round cost, the distribution ordinarily is limited to private gatherings, lectures, dinners, and similar functions; and such showings hardly warrant the cost of producing the film.

But if a film can be produced that a downtown movie house in a city the size of Portland, Ore., will show in a week's run to something over 30,000 people, and that in the course of distribution over the neighborhood picture houses and through country towns will eventually be viewed by an audience numbered conservatively in the hundred thousands, it can be understood that the motion picture offers a broad field for effective publicity. Such publicity gets particularly good results because it receives the undivided attention of an audience that is relaxing and enjoying itself. In no other form of publicity is the mind of the audience so completely concentrated on the subject matter as in the case of an enjoyable and attractive picture.

AS an advertising vehicle capable of reaching a large field in a compelling manner, the moving picture is unexcelled. The problem is to produce a picture that will find favor with distributors because of its excellence as entertainment. How well the story of power generation and transmission lends itself to the genius of the scenario writer is attested by the success of the Portland Electric Power Company's two ventures into movieland, and the guiding spirit of these ventures has written entertainingly of some of the possibilities of the subject in general, and of some of his experiences with his own productions.

The utility company, therefore, should produce such pictures as will carry the desired message to the public and at the same time provide an attractive and educational entertainment which both the exhibitor and the most critical audience will welcome and enjoy. Such a picture should contain no direct advertising; its publicity strength should lie in the suggestion carried in the picture as a whole. That this can be done successfully is shown in this company's own little experience in this line.

For instance, what is more wonderful in pictorial motion story than the tale of hydroelectric development? The little drop of water from the melting glaciers on the far-away mountainside is joined by other drops from melting snows and from rain. At the joining of the drops the tiny rivulet is formed and begins its downward journey through canyons of forest and woodland, growing ever greater as it rushes on, with wind, rain, storms and other forces of nature at work to augment it until the mighty river is formed. Then the constructive genius of man steps in, damming the stream and harnessing the mighty forces of nature to produce for mankind its great servant, electricity, a necessity to the modern community in its countless uses, while back of it all stands the electric company in earnest endeavor to do its part in the upbuilding of that community.

Such a story as this was told in the two-reel film, "The Romance of a Raindrop," produced by the Portland Electric Power Company about three years ago. The welcome that this film received from the exhibitors and the public seemed to prove, as well as emphasize, the fact that there is an established demand in the motion picture world for pictures of this type. This picture had a wide circulation among the movie houses of the large district in which the company operates, and after three years is still in demand for gatherings of a public nature.

Encouraged by the success of the first attempt at movie making, about two years ago, at the beginning of the work on the Oak Grove River hydroelectric development, the company undertook the

production of a second film, entitled "Modern Pioneers." It was the thought that through the medium of this film the message of the immensity of this project could be carried to the public.

Two Kinds of Pioneering Represented in Film

As a preface to the picture and for the purpose of furnishing a comparison to make the rest of the story more vivid, the tale of the original pioneer was told, with all the settings of covered wagons, Indians, wild animal life, log cabins, forests and streams, and with the beautiful scenery of Oregon as a background. Into this setting was woven the story of the modern pioneer in his equally strenuous efforts to subdue the wilderness for the benefit of mankind in the construction of a great hydroelectric plant. The motion picture camera intermittently clicked on the Oak Grove project during the two years consumed in its construction, so that at the completion

of the work a finished film that showed the progress of the work in all its important stages was had.

Growing before the eyes, across the primeval river out there in the forest rises the dam to completion, and with the closing of the gate the great river is impounded, ready for its work to begin. Then



"The axe and the gun carved the way through the wilderness."

grow miles and miles of pipe line in all details of construction until the last link is completed. Up from nothing comes the power house, and at last the mighty turbine is set and ready. In a test the great relief valve, under a head of nearly a thousand feet, is opened, and the entire Oak Grove River is thrown hundreds of feet through the air. The valve is closed; the turbine whirls; the great plant is finished. Electric energy races over miles of steel transmission poles to the instantaneous service of distant cities—a thrilling tale of man's efforts to produce for mankind's benefit, and one that can be fascinatingly told through the pictorial medium of the movies.

Experiences of the Director

The scenario of "Modern Pioneers" was written and directed by the writer, and the photography was by H. H. Brownell, a well-known local camera man famous for his scenic films of the Northwest country. During the taking of the picture both Brownell and the writer received a few thrills, not appearing on the celluloid, that promised to terminate two promising Hollywood careers.

As the "Old Pioneer" was felling a mighty tree as potential material for a log cabin, the tree, contrary to the plans of the efficiency engineer handling the ax, insisted on falling in the wrong direction. When the dust and branches were cleared from the atmosphere, the artists were seen to have made a lucky fadeout, none too soon, with all and sundry of the camera tools. As a result of the accident, the near-by telephone and power pole line and a part of the railway track of the great Oak Grove development had to be redeveloped; and later the general superintendent indulged himself in a short, pointed scenario all his own to express his opinion of motion pictures in general and "Modern Pioneers" in particular.

On another occasion, when "shooting" the tunnel in the top of the penstock hill nearly a thousand feet above the power-house site, a family-sized boulder



Typical scenes from the moving picture "Modern Pioneers" portraying the Oak Grove project of the Portland Electric Power Company, showing the character of the country.

dropped from the roof of the tunnel, falling between and betwixt the camera and its operators, but fortunately sparing both to posterity.

One other time the pearly gates yawned wide to receive an addition to its motion picture colony, if any there be within the heavenly precinct. One rainy day the gasoline speeder, homeward bound at a fast clip with camera, director and operator on board, was folded into the bosom of a freight engine. When the splinters, pieces of iron and other flying parts, including two aviating operators, had settled from the revolving atmosphere, it was found that the luck still held, and again it was demonstrated that the scenario of "Modern Pioneers" was a good deal less spectacular than some incidents of the actual taking thereof.

Success Is Attained

Withal, it was an exceedingly interesting undertaking to build up the picture from a disconnected group of incidents and work them into a connected story that would stand the acid test of criticism from the exacting movie-going public. For out of it all grew a picture that, upon its first production in Portland's largest motion-picture house, the Liberty Theater, met with the following opinion from C. S. Jensen, of Jensen & Von Herberg, one of the largest exhibitors of motion pictures in the Northwest:

"The picture's presentation of Oregon's gorgeous scenery, coupled with a graphic demonstration of the utilization of some of our state's vast resources, makes it one of the best scenic and educational subjects which I have ever seen. I am sure it will prove a welcome addition to any motion-picture program presented anywhere, but especially in Oregon."

This shows that in the great motion-picture world there is a demand for such a type of pictures as "Modern Pioneers." The movies present a tremendous field for the education of the public to a better understanding of what the local utility company is doing or is trying to do; for explaining why it is impossible to do some of the things that the public demands, and for carrying to the public the message of the utility's great constructive efforts toward the upbuilding and progress of the community.

Distribution and Cost

When the picture houses have all exhibited the picture, there still remains a wide circulation among the community clubs, associations, churches, schools and other organizations, many of which now have their own motion picture projectors; and it is surprising to note what a constant demand comes for the showing of the film at such gatherings. In fact, it is necessary to take good care of a film to keep it from wearing out before the expiration of its active usefulness.

The cost of production of such a film is small in comparison with that of other forms of publicity. The cost of an active advertising campaign in the newspapers, extending over a period of a week or two, would pay the entire cost of the production of a two-reel film; and the film will live long after the newspaper advertisements are forgotten.

It must be borne in mind, however, that the production and distribution of the motion picture have been reduced to an exact science. The drawing power of the film must be viewed from the angle of its appeal to the public and from that of the box office. Therefore, the utility that desires to present its message to the public must exercise great care in the preparation of its material. This should not be a difficult problem, for the development of a hydro-electric project, from its inception to the final production of the current that lights cities and towns and turns the wheels of industry, is in itself so vital and romantic a story that, properly presented, it should arouse the interest of the most jaded picture theater-goer. The success attained by the Portland Electric Power Company and other organizations points the way to a new and particularly attractive medium of contact between the utility and the consumer.



"Modern Pioneers" tells the story of the native Indians and the coming of "the white man, a defiant and heroic battler coursing Westward," and shows "The village that was Portland."

Utilization of Electricity on California Farms

By L. J. Fletcher

Division of Agricultural Engineering, College of Agriculture, University of California.
Chairman, California Committee on the Relation of Electricity to Agriculture.

COMPREHENSIVE investigation on the application of electricity to agriculture is a matter of nationwide importance. That the swing of the economic pendulum is distinctly toward the farmer and his problems was indicated in the late presidential campaign. Recognition has become general that as the farmer prospers so prospers the nation, and within the last three or four years many movements have been instituted looking toward an improvement in rural conditions. Thus it is only natural that the electrical industry should sooner or later turn its attention to the farmer and his problems, because electricity, with its peculiar characteristics and ease of distribution, offers a potential source of power to America's largest industry almost unlimited in its scope.

In so far as the electrical industry is concerned, the movement is little more than a year old. In 1923 representatives of the National Electric Light Association met with members of the American Farm Bureau Federation to determine ways and means of answering the question, "What can electricity do for agriculture?" This conference brought out several fundamental facts. The development of the further use of electricity on the farm required answers to two important questions, namely: How can service be supplied to the farmer and what is involved in its establishment? How can service be utilized by the farmer so that it will be profitable to him?

The conference proposed that a cooperative organization representing both the electrical and agricultural interests be formed to study the problem and put in form available for use by anyone, the following:

(a) The various methods by which electrical energy can be profitably utilized on the farm, including research studies of equipment characteristics as well as methods.

(b) The facts regarding transmission lines and electrical equipment needed to furnish the farmer electric service comparable in quality with that already supplied the industrial field.

The purpose of the proposed work was set down as the ascertaining of facts. No selfish propaganda of any interest or class would be allowed to enter.

The final outcome was the formation of a na-

TO determine to what extent electricity is applied to agriculture in California a committee, headed by Mr. Fletcher and representing the agricultural and electrical interests in the state, has been appointed. The committee will make a thorough survey of existing conditions and will make recommendations for future usage of electricity on the farm. In this article, Mr. Fletcher describes the organization plan that will be followed.

tional Committee on the Relation of Electricity to Agriculture with Dr. E. A. White, an eminent agricultural engineer, as director. The committee included representatives from the following organizations:

American Farm Bureau Federation.

National Electric Light Association.

Power Farm Association.
American Society of Agricultural Engineers.

U. S. Department of Agriculture.

U. S. Department of Commerce.

U. S. Department of Interior.

The chief task of this committee was to give purpose and direction to the work necessary in determining the maximum economic uses of electricity in agriculture. It proposed to organize the work on a state basis, setting up state committees similar in organization to the national committee, where sufficient interest in the problem was found. Minnesota, Alabama, South Dakota, Kansas, Iowa, California and Oregon are among the states where work is actively in progress.

California's participation in the work had its inception in May, 1924, as the result of a meeting called in San Francisco at the request of Dr. White, director of the national committee. This meeting was attended by leaders of the California Farm Bureau Federation, executives of most of the California central stations, members of the staff of the College of Agriculture of the University of California and representatives of many of the large electrical manufacturers. Among the things brought out at this conference was the fact that California has developed the application of electricity on the farm to a greater extent than any other section of the nation, if not of the entire world. This is due primarily to the fact that many California farms require irrigation and that electricity was the most readily available and cheapest sources of power for driving the irrigation pumps. The second contributing factor has been the development of an elaborate interconnected system of transmission lines which traverse practically every section of the great interior valleys, which are the chief agricultural regions of the state. Thus power has been available in the rural districts, the only requirement being the installation of suitable substations and transformer equipment and the construction of distribution lines.

The extent to which California has utilized the electric power thus made available on her farms is shown in the following figures, which give a fairly comprehensive picture of the use which is being made of electricity by the farmer:

Total number of farms (1920 census).....	117,670
Total number of rural power consumers (1923).....	26,915
Total number of electric lighting, cooking and other domestic service consumers outside of incorporated cities and towns (1923).....	93,156
Total electric energy (kw-hr.) consumed on California farms (1923).....	421,646,000

Over one-third of the total power (animal and mechanical) used on the farms of California is furnished by electric motors.

At the San Francisco meeting, which was presided over by A. C. Hardison, president of the California Farm Bureau Federation, a committee was appointed to make investigations concerning the use of electricity in California agriculture. The personnel of the California Committee on the Relation of Electricity to Agriculture follows:

- L. J. Fletcher, Agricultural Engineering Division, College of Agriculture, University of California, chairman.
- J. J. Deuel, Law and Utilities Department, California Farm Bureau Federation.
- B. M. Maddox, district manager, Southern California Edison Company, Visalia.
- C. A. Utley, the Pelton Water Wheel Company, and president of the Western Irrigation Equipment Association.
- A. M. Frost, commercial manager, San Joaquin Light & Power Corporation, Fresno.
- J. W. Nelson, secretary, California Farm Bureau Federation.
- H. M. Crawford, sales manager, Pacific Gas and Electric Company, San Francisco.
- N. R. Sutherland, Pacific Gas and Electric Company, San Francisco.
- E. O. Shreve, district manager, General Electric Company, San Francisco.
- B. D. Moses, Agricultural Engineering Division, College of Agriculture, University of California, executive secretary.

At a subsequent meeting of the above committee a plan was proposed for definitely tying in the work of this committee with the College of Agriculture of the University of California.

Officials of the college proposed to assign Professor Moses to the task of organizing and directing the work in California, the California power companies having guaranteed sufficient funds for the conduct of the work. Professor Moses' duties as executive secretary of the committee include the correlation of the work of the committee, the gathering and centralizing of data, the organization of projects and preparing for publication of articles describing the work and giving the results.

The committee determined as its objects the following:

(1) To find and give publicity to all of the efficient ways of utilizing electric energy on California farms.

(2) The organization of projects for

(a) The securing of data concerning present uses of electricity in California agriculture.

(b) The establishing and carrying out of various investigations based on new and untried uses for electric energy on the farm.

Four general project committees were organized,

the first of which, with J. J. Deuel as chairman, will collect data on existing uses of electricity on California farms. The second, headed by B. M. Maddox, will determine the methods employed by California utilities in rate making for rural districts. The third, of which E. O. Shreve is chairman, will study the utilization of electricity in the farm home. The fourth, headed by C. A. Utley, will investigate the utilization of electricity in agricultural production. The third and fourth committees have established a number of subcommittees, each responsible for a definite project, such as farm home lighting, irrigation pumping, dehydration, poultry incubation, brooding, etc. The duties in detail of the four committees follow:

(1) Cost and other data concerning the present utilization of electricity on California farms. This committee is to secure all possible information concerning present uses, including such items as actual costs and costs as compared to other kinds of power; kinds of uses; number of users and amount of electricity used; hours and time of use; load factors; cost of equipment; power requirements; efficiency, and any other data which will aid in determining the present economic uses of electrical energy.

- J. J. Deuel, chairman.
- Lloyd Henley, San Joaquin Light & Power Corporation, Fresno.
- A. G. Cage, Southern Sierras Power Company, Riverside.
- N. R. Sutherland.
- W. C. McWhinney, Southern California Edison Company, Los Angeles.

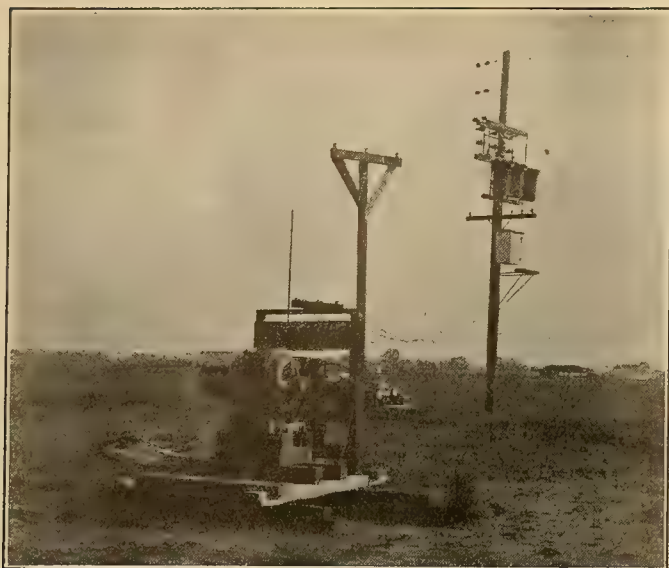
(2) How the electric public utilities in California are regulated and how rates are made. This committee will study the development of contracts and rate making as an aid to other states, together with a statement of the present situation, policies involved in rate determination, etc.

- B. M. Maddox, chairman.
- J. J. Deuel.
- Robert Sibley, executive manager, California Alumni Association, University of California.
- H. A. Barre, Southern California Edison Company, Los Angeles.
- A. V. Guillou, California Railroad Commission, San Francisco.

(3) Utilization of electricity in the farm home. This committee is to make a complete investigation of the use of electricity in the ways in which it will improve living conditions, lighten the work in the farm home, and in general bring to the farm the conveniences now enjoyed in the city home.

- E. O. Shreve, General Electric Company, San Francisco, chairman.
- Percy Booth, Edison Electric Appliance Company, Los Angeles.
- J. P. Fairbank, agricultural engineer Extension Specialist, University of California, Davis.

(4) Economic utilization of electricity in California agriculture. This committee is to make a study of the ways in which present utilization may be improved, especially as it is applied to production on the farm. It is also to study how electric energy compares in cost and service with other types of energy. Investigations may involve the design and testing of special equipment better adapted to electrical operation. This committee will also investigate the possibilities of manufacturing on the farm.



Portable motors and transformer banks will receive the attention of the committee. Here is a 50-hp. portable motor used for miscellaneous pumping and for running an ensilage cutter and elevator on one of the large California ranches.

The work of this committee is distinguished from that of No. 3 in that its investigations will not deal with those phases of rural electrification which have to do with the personal satisfaction or general improvement of living conditions derived from its use. The studies will be made very largely on the basis of cost and service.

C. A. Utley, chairman.

R. A. Balzari, Westinghouse Electric & Manufacturing Company, San Francisco.

J. W. Nelson.

H. M. Crawford.

B. D. Moses.

Committee No. 1, which is charged with securing definite basic information on the present utilization of electricity in agriculture in the state, has prepared two sets of questionnaires, one to be answered by power companies themselves, dealing with such items as total number of agricultural consumers, both light and power; agricultural load in kw. and the annual kw-hr. consumption for this class of service. The second questionnaire is to be prepared in the form of a postcard and will be mailed out to all agricultural electric consumers in California with a view of determining the size and character of individual installations and applications, including the extent to which farm homes are equipped with ranges, water heaters and other appliances as well as the size and capacity of the irrigation pumps, motor-driven feed cutters, silo fillers, shop motors, grinders, etc. The questionnaire to the agricultural consumers themselves will emphasize the importance of the work, its noncommercial character and the fact that the California Farm Bureau Federation is actively sponsoring the investigations.

Committee No. 2 has already begun work on studies of the rate-making methods employed by California utilities and on the contract forms used for rural consumers.

The work of committee No. 3 is divided into four classes, and a study will be made of the extent to which electric energy is used for cooking, water heat-

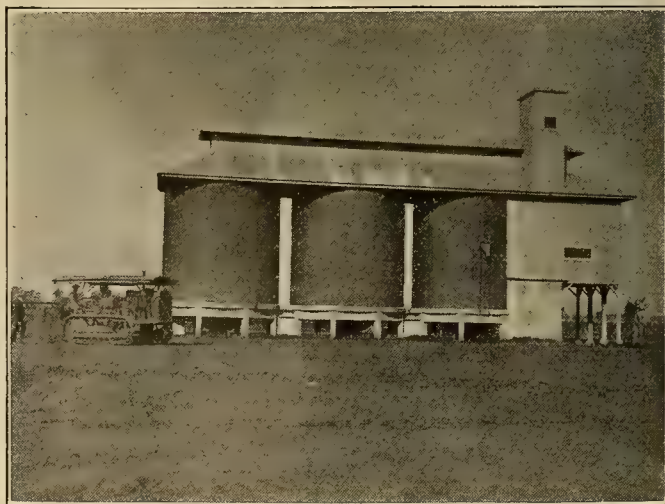
ing, washing, cleaning and other domestic services. Other studies will be made of its application to refrigeration, heating and ventilation, and water supply.

The investigations of committee No. 4 will deal with the following:

- (1) Pumping for irrigation.
- (2) Finishing and processing of farm products and dehydration.
- (3) Poultry equipment.
- (4) Dairy farm equipment.
- (5) Power for the farm shop.
- (6) Portable motors; the development of portable transformers.
- (7) Farm refrigeration.
- (8) Stationary spraying.

From the standpoint of the electrical industry and the California farmer, the investigations which are to be carried on by the Committee on the Relation of Electricity to Agriculture are of the greatest importance. While the opinion has been general that electric energy has found its greatest application to agriculture in this state, the exact status of this application has never been known definitely. There are many questions which will be answered during the course of the investigations. For instance, information will be secured which will determine whether the farmer is utilizing electricity efficiently and profitably at the present time. If facts show that other forms of power are more suitable for certain farm operations, this fact will be brought out. If new uses for electric energy can be developed, power company and farmer will benefit.

In addition, the investigations in this state will be of the greatest benefit to similar committees working in the Middle West, the South and the East, where rural electrification is yet in its infancy. The statement has been made by one high in authority in the electrical industry that California will be the major workshop in the national movement. However, if no other accomplishment comes from the work of the committee than to bring the farmers and the utilities to a closer mutual understanding, much will have been done for the betterment of the state.



Applications of electricity on the farm such as this, in which a 60-hp. motor drives a grain elevator and grinder, will be studied by the committee.

Commercial National Section Discusses Load Increase

By George W. Barker
Associate Editor, Journal of Electricity

LOAD increase was the major topic at the meeting of the Commercial National Section of the National Electric Light Association at the Hotel Rafael, San Rafael, Calif., Nov. 19-21, 1924, when approximately 200 members of the commercial branches of the electrical industry gathered for the purpose of discussing their particular problems. Increased sales only with increased service to the consumer were the keynote of the discussions. This applies equally well to the sale of electrical appliances and to the sale of energy. Throughout all of the individual committee meetings during the three-day session, the fact was apparent that this section is building on the sound basis of satisfied consumers and that sales volume is desired only when the attendant equipment will add to the more satisfactory use of electricity by the consumer. Frequent gratification was expressed or implied when ways and means had been found for more scientific application of energy to a consumer's needs, even though this application might result in somewhat decreased consumption from that of previous equipment for the specific purpose. The idea was often expressed that improved application eventually resulted in the use of energy for new purposes and that the policy of conscientious service is a force to be reckoned with in establishing public relations.

The meeting opened with a general conference on Nov. 19, with W. R. Putnam, vice-president and general manager of the Idaho Power Company, Boise, Idaho, and chairman of the Commercial National Section, in the chair. After a short general address of welcome, in which general plans for the meeting were outlined, Robert Sibley, executive manager of the California Alumni Association, gave an interesting talk on the World Power Conference held in London, England, during July, 1924. There were present at this conference about 3,000 conferees, and the affair was notable for the fact that, for the first time, the progress of the world in power development was presented and recorded in the English language. From the fact that representatives were on hand from every nation in the world, the interest of governments in power development was well indicated, Mr. Sibley stated. It seems apparent that the industrial activity of a community may be measured by

A thorough analysis of the problems of load increase, merchandise sales and customer relations, by leading commercial department men of the electrical utilities of the United States and a consideration of new avenues of business, together with cooperation with other industries were the topics that engaged the attention at the Section's conclave meeting held at San Rafael, Calif., November 19-21, 1924.

the power output. This being the case, the United States stands well in the industrial foreground, for reports at the World Power Conference indicate that the production of electrical energy in this country exceeds by 20 per cent the combined production of the rest of the world.

Interest at the meeting of the lighting committee was centered in the matter of whether or not the electrical industry should at-

tempt to capitalize commercially on the recent Better Home Lighting Contest. The discussion on this subject was extensive and animated, the chief feature being that the electrical industry had made a definite promise in good faith that the contest should not be touched by any commercial effort or atmosphere. The consensus of opinion was that the educational work that has been so thoroughly and painstakingly done during the contest should be followed up very definitely and fully with properly directed sales campaigns during the ensuing year. There was no argument, however, over the fact that future potential business should be developed in such a manner that educators could never consider that the pledge of the entire industry had in any way been violated. The fact was brought out that the cooperation of the educational interests has been such a vital factor in the success of the campaign that the industry is bound to exert unusual precautions in the formation of sales plans to refrain from reference to the contest.

H. M. Crawford, sales manager of the Pacific Gas and Electric Company, San Francisco, Calif., summarized the situation well when he said that a commercial follow-up is already planned and in execution and that the section should suggest ways and means of follow-up from an educational point of view. He suggested the formation of large groups within the industry for the purpose of speaking on better lighting before chosen audiences. The chairman of the committee, C. C. Munroe, of the Detroit Edison Company, Detroit, Mich., and others present felt that there should be some return from the investment and that this committee can help to improve the residence lighting of America.

The contest has cost the industry a large sum, but the fact that this investment is well advised is

verified by the already evidenced interest on the part of the public in the matter of illumination. This interest has expressed itself in inquiries, as well as sales, and the feeling in the industry is that this early impetus augurs well for a large-volume sales follow-up. This volume will not be confined to the immediate future, but will be spread over many years on account of the fact that the children who have participated will demand better lighting when they are older.

Interest Aroused in Better Lighting

The valuable effect of the primers used in connection with the contest was stressed by practically all who spoke on the subject, and it was stated that many educators have expressed a desire to incorporate into their courses and into the curriculums of schools generally a comprehensive study of light and lighting. Libraries have become interested in the subject and in this way the matter of lighting will become of fundamental interest and the resultant effect upon sales volume of lighting equipment and of accompanying electrical supplies will be felt for a considerable time. A feature of the discussion not to be overlooked was the opinion voiced by one representative that public relations are directly affected by good lighting. A. Jackson Marshall, secretary of the National Electric Light Association, New York City, said that it had been found that consumers whose lighting equipment was of the proper type and efficiency were prone to pay higher bills with less complaint than those whose fixtures provided inadequate illumination and whose bills were often much lower.

The value of the better lighting movement may be expressed financially by the remarks of Mr. Putnam, who said that the use of only one additional kw-hr. of energy per month by every home in the country means an added revenue to central stations of more than \$1,000,000. This huge return justifies properly directed commercial effort. The Better Lighting Contest is recognized as a powerful means toward accomplishing this additional load and, from

reports by men from various geographic divisions, it was evidenced that the contest had been highly successful. As a natural result of the contest and as an educational benefit, it was felt that the National Electric Light Association should endeavor to institute courses in lighting in those schools of the country where the subject could best be handled. This would enable educators to guide students in the matter of lighting equipment just as they are now guided in art, music, domestic science and other essentials of daily life.

An interesting feature of the meeting of the lighting committee was a detailed description by P. M. Parry, commercial manager, Utah Power & Light Company, Salt Lake City, Utah, of the organization and functioning of a Lighting Service Bureau. This bureau was conceived to improve illumination conditions in stores, restaurants, etc., and has had a remarkable record of achievement. The personnel of the bureau includes all branches of the industry, who have served without compensation other than that from regular sources of employment and have acted in the capacity of illumination advisory engineers. No charge has been made to the consumer for this service, and a total of about 200 jobs has been installed. The bureau has recommended types of equipment only and has not specified individual manufacturer's goods. In this way an impartial service has been rendered, and the selection of lighting fixtures has been left a competitive matter. The cost of the bureau service for this work has been about 5 cents per dollar of annual revenue from installations supervised by the bureau. The results of the bureau's work have been so satisfactory to the consumer that the service is now in steady demand by architects and builders.

Discussion of Lighting Schools

A discussion of the lighting schools that are to be held by the association drew forth the general opinion that these schools should be held preferably at Harrison, N. J., Cleveland, Ohio, and Oakland, Calif. The time of holding the schools will be



A group of the delegates attending the recent meeting

worked out to meet the varying seasonal business conditions found in the different sections of the country.

It was the unanimous opinion of this committee that the lighting educational course conducted for the last few years should be continued, and a motion to this effect was passed. The suggestion was advanced that in order to take advantage of the Eastern talent that would be assembled in San Francisco during June, 1925, it would be desirable to hold an electric heating and transportation school just prior to the national convention to be held beginning June 15. The power bureau, at its meeting held later, passed a motion asking the executive committee of the commercial section to hold such an industrial school.

University Farm Lighting Exhibit

One of the most interesting things in connection with the meeting of the lighting committee was the exhibit of the University of California Agricultural Extension Division. This is a traveling demonstration of lighting and lighting effects and was conceived and executed by the staff at the University Farm, Davis, Calif. Under the direction of L. J. Fletcher, assistant professor of agricultural engineering, B. D. Moses and J. P. Fairbank have constructed a portable booth which is used for the purpose of showing the farmers the value of electricity for illumination and for demonstrating the various types of fixtures, together with their advantages and disadvantages. The outfit is packed in a box 8 ft. long and 3 ft. square and is transported from one farm center to another on a light truck. Previous arrangements having been made by the proper authorities—farm bureau agent or some other representative of farming interests—the exhibit is presented at a convenient place in the farming community. This service is conducted by the University as a part of its work in connection with the improvement in farm living conditions. In order to further the agricultural application of electricity and to determine to just what extent it may be so applied economically,

the university has assigned B. D. Moses to an investigation. This will be the university's contribution to the work of the Committee on the Relation of Electricity to Agriculture. Funds for financing this work have been raised by voluntary contributions from the power companies.

Appliance Committee

The outstanding feature of the meeting of the appliance committee was the expression of opinion relative to central station merchandising. Those who expressed themselves generally indicated without question that a sound policy of central station merchandising is essential to bring about the desired volume of appliance business. It was also stated that, in those sections of the country where central stations have put such sound policies into effect, general electrical merchandising conditions without exception have been improved and dealers have benefited. The advertising and sales work done by the power company, the sale of reliable merchandise at full list price, with a proper charge for time payments and the maintenance of an adequate appliance service department, have tended to improve dealer effort and have increased sales volume for all in the appliance business. Appliance sales as high as \$20 per lighting meter were reported, and the appliance sales departments were commonly reported as showing a profit although some companies find that their profit is in revenue.

Central Stations Merchandising Guides

An interesting demonstration of the value of central station merchandising effort was furnished by the statement that where the power company had dressed its windows only a week before Christmas the dealers had done the same, but when the company changed its display two weeks before the holiday the dealers followed suit. It was thus shown that dealers looked to the central station for guidance in merchandising matters. Following this line of thought, the central station stands in the position of having to accept the definite responsibility for merchandising conditions in its territory.



Commercial Section at Hotel Rafael, San Rafael, Calif.

It was felt that sales promotion, instead of becoming cheaper, will undoubtedly cost more. However, it was also the opinion that it will be worth more to the dealer and to the central station, as each appliance sold reduces the barrier for future electric appliance profits.

An important phase of sales by central stations is the matter of public relations. Many power companies feel that their best public relations employee is the salesman and that he offers the closest point of contact between the company and the consumer. Some companies have established service-sales departments, the members of which are equipped to make minor repairs on electric appliances and who also follow up this gratuitous service with appliance sales effort immediately after completing the repair job. The impression on the consumer made by the free repair service creates a friendly relation and also frequently makes possible the sale of additional appliances and, not infrequently, company securities. The opinion was often expressed that, where it had not already happened, the public relations department of utilities would eventually be consolidated with or absorbed by the sales department.

Appliance Committee to Compile Sales Data

While no concrete sales plans were presented at this meeting, the appliance committee this year will devote its efforts to producing and assembling sales data. Specific information on definite sales campaigns and selling methods will be sought, and the details of these campaigns will be studied to determine their general application. An interesting feature of this meeting was the outlining by members of the Pacific Coast Electrical Association of the program for the year. This program includes an appliance sales plan covering twelve months and embraces sales plans for electric appliances—by dealers and central stations. It also includes a plan for dealers in motor-driven appliances.

George H. Jones, Chicago, Ill., gave some interesting information relative to the installation of electric cooking equipment in hotels and restaurants and stated that his company had found no difficulty in making sales of this type of equipment either from the point of view of first cost or of operating expense. The improved product, facility of operation, elimination of smoke, removal of fire hazard and pleasanter working conditions for kitchen employees have proved factors in connection with this sales effort and have resulted in the entire kitchens of some of the largest hotels and clubs being completely electrified. One restaurant proprietor is so well pleased with the electric kitchen equipment in his cafes that he intends to add electric heating of the premises themselves in the next place he opens.

Attitude of Coffee Roasters' Association

One feature of interest that must command the attention of the electrical industry is the attitude of the Coffee Roasters' Association. This organization is apparently opposed to the use of electric percolators and committees representing the electrical and coffee interests are endeavoring to work out a happy

solution. This opens up the advisability and the possibility of seeking the assistance of related industries in the promotion of appliance sales. For example, many baking concerns have assisted in the sale of electric toasters, and it is thought that there may be other similar cooperative possibilities.

Power Committee

The major discussion of the power committee centered around the matter of purchased versus generated power. The interest in this phase of operation was evidenced by the number of participants in the session and by the variety of ideas expressed. H. E. Sandoval, manager of electric sales, Pacific Gas and Electric Company, San Francisco, Calif., stated that the Pacific Coast Electrical Association was considering in its power committee the following problems: The utilization of waste heat in (a) cement plants, (b) sawmills, (c) laundries, (d) hotels, and the matter of competition from the Diesel engines. The discussion regarding waste heat in cement plants was particularly lively and it was the sense of the meeting that many cement plants can be induced to purchase energy, at least in part. Common experience has been that those plants that are producing energy from waste heat have seldom been able to produce sufficient to care for their needs and that they have been obliged to purchase additional service from the utility.

The commercial bake oven load was the subject of protracted discussion at the evening meeting held by the power committee and considerable interesting information was presented. P. M. Parry, of the Utah Power & Light Company, Salt Lake City, Utah, told of the commercial bake oven load in his territory and stated that practically all commercial ovens were electrically operated. He stated further that every oven so heated has proved entirely satisfactory. This load has generally been found by members to be of profitable character and there are numerous instances where large commercial baking companies have changed over from fuel to electricity. The committee was interested in the combined light and power rate for this service as applied in Chicago and information on this service was furnished by George H. Jones.

A motion was passed by the power committee asking the approval of the executive committee for holding an electric heating school in San Francisco the week before the annual convention in June, 1925.

Electric Cooking and Heating Committee

The electric range survey, now under way in the Pacific Northwest, commanded the interest of all in attendance at the meeting of the Electric Cooking and Heating Committee. Lewis A. Lewis, sales manager of the Washington Water Power Company, Spokane, Wash., reported in detail the progress of the survey and showed what it was hoped to accomplish with the assembling of the data accruing from the study. The report will be considered both from a commercial and an engineering standpoint, and the committee expects to make definite recommendations as to the value of this type of load at the national

convention in June, 1926. Investigations and tests will cover three seasons of the year—winter, spring and summer—and the tests will be conducted in typical districts of the cities of Spokane, Wash., and Boise, Idaho. A report on the winter set-up will be made at the June, 1925, convention to be held in San Francisco. The survey is being made under the direction of H. L. Melvin, electrical engineer, Washington Water Power Company, Spokane, Wash.; F. J. Rankin, chief engineer, Idaho Power Company, Boise, Idaho, and M. T. Crawford, superintendent of distribution, Puget Sound Power & Light Company, Seattle, Wash. The data to be obtained are as follows:

1. A. Data regarding average demand of range.
B. Data regarding annual kilowatt-hour consumption per range.
2. Data regarding average demand in relation to average connected load per range.
3. Data showing diversity of range demand.
 - (a) Charts giving load characteristics of a large group of ranges, 10, 25, 50 to 150.
 - (b) Charts giving characteristics of lighting and range load in apartment houses, etc.
 - (c) Diversity between range peak and system peak.
4. Transformer capacity required for ranges.
5. Figures showing investment costs of central stations required to provide service to ranges under various conditions.
 - (a) Figures showing downward tendency of investment cost as group of ranges increases.
6. Demand of range on distribution system, substation and power plant.
 - (a) Effect of demand of group of ranges on substation and power plant.
 - (b) Time of annual peak with different load characteristics, i. e., before group of ranges installed and after.
7. Data regarding average wiring cost to customers.
8. Average life of ranges.
 - (a) Maintenance cost of range.
9. Effect of range load on regulation.
10. Distribution and investment costs.
Distribution, operation and maintenance.
Customer costs.
11. Figures showing effect of load factor on kilowatt-hour cost to central station.
12. Water heaters.
 - (a) Data regarding type and size of water heater installed.
Demand and average kilowatt-hour consumption of water heaters.
 - (b) Load characteristics where range and water heater are on double-throw switch and also where range and water heaters are used at the same time.
 - (c) Data regarding additional cost of installation to alternate range and water heater.

It is expected that unusually interesting and valuable engineering and commercial data will accrue from the study as the density of range penetration reaches, in some of the districts to be surveyed, as high as 50 per cent of the consumers. It is hoped that from the results obtained curves may be derived that may be superimposed on the system curves of any company to give a picture of the range load.

Metered Water Heating Committee Report

The report of the Pacific Coast Electrical Association Committee on Metered Water Heating presented interesting figures which showed that there are approximately 10,000 electric water heaters in that territory alone. Of these heaters, most of

which are of the circulation type and 95 per cent of which are metered, approximately two-thirds are equipped with thermostats and the majority are used in combination with an electric range and on a double-throw switch. This is an advantageous arrangement as it reduces the monthly minimum, and it is felt that the range takes up the first block of the rate, thus making the rate for water heating sufficiently low to be attractive to consumers. The energy consumption for water heating varies from 250 kw-hr. to 850 kw-hr. per month. Where insulation is used on the water tanks the consumption is materially reduced, and some companies require that all tanks be covered. The common insulating practice embodies the use of either 1-in. or 2-in. material, but some consumers have used 3-in. covers. The radiation losses are much less with well insulated tanks than with tanks left bare or poorly covered.

Cost Figures Given

It was the sense of the meeting that smaller heaters probably produced a higher load factor, but that consumption is greater with a large heater. The size of the heater in common use varies in different communities from 1-kw. to 5-kw. capacity. This variation has been occasioned in some instances by rate conditions and the smaller heater has been fostered by the flat rate. It was shown that energy sold on a flat rate for water heating often brought in a revenue of six-tenths of a cent or less. The flat rate is looked upon as being detrimental to central station interests, and effort is being made toward a rate revision where flat rates now exist.

Electric cooking and water heating are being done in the Pacific Coast states with rates as high as 3½ cents per kw-hr. The cost of electrically heated water at 2 cents per kw-hr. is about the same as for gas-heated water with gas at \$1 per M cu.ft. and of 550 B.t.u. content. Continuous hot water heaters connected to a storage tank appear to work fairly constantly between 10 p.m. and 3 a.m., with variations in the period of floating on the line during other hours. The cost for continuous hot water service seems to be about double that of intermittent service, and a 5-kw. heater is found to be about equivalent to the average circulating type gas water heater. One company, however, has 1,000 electric water heaters on its lines, all of 1 kw. each and working at a rate of 1 cent per kw-hr., with a monthly minimum of \$2. In the case of many consumers in the Northwest, where furnaces are used, it is common practice to pipe the tank to the furnace as well as to the water heater and thus to save on energy consumption. There seems no doubt but that a rate of 1.5 cents per kw-hr. would stimulate the water-heating business and might have far-reaching consequences.

To Record Range Service Costs

It is now the intention of some twenty companies in the Great Lakes district to keep their service cost records on electric ranges in uniform fashion in order to be able to give proper comparisons and to furnish accurate service cost data. A subcommittee, under the chairmanship of C. E.

Greenwood, of the Edison Electric Illuminating Company, Boston, Mass., is working on the revision of wiring standards as they affect the installation of electric ranges and water heaters. The report, read by A. L. Smith, showed the need for everyone interested to get behind any movement to change wiring specifications for this class of equipment. The report also contained specifications for a new range plug switch, the use of which it is expected will assist in reducing installation costs.

Customer Relations Committee

Realizing that the employee is the utility's real point of contact with the consumer, the Customer Relations Committee devoted much of its time and discussion to improvement of employees' status. This is regarded as a vital factor in future development of public service companies and many ideas were advanced. One of the most important suggestions came from members of the Pacific Coast Electrical Association and had reference to an employees' manual that is now under preparation. This manual will be in such form that it may be applied to any company's system and will give general data necessary for the more intelligent handling of the public by employees. It is hoped by this means so to improve the employees' understanding of the consumers' and the company's problems that better customer relations will be established on a basis of mutual understanding.

The Courteous Service Club was described in detail by R. A. Balzari, manager, industrial department of the Westinghouse Electric & Manufacturing Company, San Francisco, Calif., and the idea will be presented to the association with the view of further supporting the movement.

Electric Domestic Refrigeration Committee

The high first cost of domestic electric refrigeration devices and the fact that such apparatus is not yet perfect in detail were the topics of major interest at the meeting of this committee. The fact that electric domestic refrigeration offers big sales possibilities but that many central stations feel that policy matters intervene was also brought out. Second in interest were the facts that this type of apparatus has not yet been perfected so that service troubles have been entirely eliminated, and the need for adequate service organization or provision for taking care of this important feature of the sale. There are now several makes of electric refrigerator on the market and more in development and it is felt that the past troubles are rapidly being overcome. At the present time it seems to be the policy of those central stations that are selling refrigeration equipment to also take care of the service. In some cases this service is rendered gratuitously and in others it is the practice to charge a small fee. Some companies are endeavoring to work out a flat rate per year for this maintenance service and it has been found that in many cases the maintenance costs are so low as to be astounding. One member stated that his experience showed that service costs had been less than on the first equivalent number of electric irons. Another member claimed that his service charges on

electric refrigeration equipment were less than on the same number of electric washers.

The quality of electric refrigeration is superior to that of ice and the cost at a rate of 9c per kw-hr. is claimed to be about the same as ice. Enough machines have been sold to prove, in spite of the present minor service difficulties, the perfect consumer satisfaction. One company expects to have 1,000 additional machines on its lines within the next year and anticipates no troubles of serious moment, basing its idea on past experience.

Various plans have been followed for the promotion of this class of business and one central station has tried successfully the plan of selling on thirty or sixty days approval, taking the machine back if the consumer was not satisfied at the end of the trial period. It was the general opinion that the best sales method was based on practical demonstration and that this business offers pleasing possibilities to aggressive dealers and central stations.

Transportation Committee

One of the outstanding features of the meeting of the Transportation Committee was the fact that many national trade organizations have conducted investigations that have resulted in their approval of the electric truck as applied to their particular businesses and have commented favorably on its application. This, together with the fact that electric truck battery charging offers an attractive central station load, with opportunity to fill up night valleys, thus making more effective the work of existing investment, provides an inducement to power companies to foster the electric truck business. While it is true that the demands of war interfered with the development of electric truck business, war conditions have now been overcome and the battery and vehicle manufacturers have the inclination to proceed as rapidly as the market warrants.

It was generally felt that there is a tendency to sell the technicalities of truck construction rather than transportation and it was evidenced that central stations must be the guides in truck sales. Not only must they apply electric trucks to their own transportation problems wherever possible but they must also assist in the promotion of truck sales by others. One power company has seven electric trucks and is making an intensive study of the relative costs as compared with gasoline vehicles. The Pacific Gas and Electric Company, San Francisco, Calif., has established an electric transportation bureau for assisting in the sale of electric trucks but the company does not sell any equipment. The bureau furnishes information and refers the prospect to the various representatives of truck manufacturers.

A motion was passed by this committee and referred to the executive committee urging that the Pacific Coast Electrical Association cooperate with the National Electric Light Association to hold a transportation school in San Francisco, Calif., the week before the National Convention in June, 1925. The members of this committee created some interest and introduced a novel feature by making the trip from San Francisco to San Rafael in an electric truck,

timing their arrival to coincide with the time of the committee meeting.

General Conference

The general conference was held under the direction of A. M. Frost, manager, commercial department, San Joaquin Light & Power Corporation, Fresno, Calif., and chairman of the executive committee of the Pacific Coast Electrical Association. Mr. Frost's address was very brief and was followed by a short talk by Frank A. Leach, Jr., vice-president and general manager of the Pacific Gas and Electric Company, San Francisco, Calif., and president of the Pacific Coast Electrical Association. Dr. E. A. White, chairman of the National Committee on the Relation of Electricity to Agriculture then spoke at length on the work of the committee. Dr. White said that electric service on the farm is an obligation on the farmer and the public service company alike. He also stated that agriculture could not longer be pampered as it had been in some respects in the past. The aims of the committee are to determine the maximum possible economic uses of electricity on the farm and not to recommend electricity as a panacea for all farm ills. The electric motor on the farm is, in effect, in competition with all other forms of prime mover and in the last analysis the source of energy best adapted as a prime mover will come out on top, in Dr. White's opinion. In his opinion, too, the chief requisites for selling the farmer are, first, to inspire his confidence; second, to deal with him honestly, and, third, to give him the information he needs for the consideration of his specific problems. Particularly the farmer needs to know the cost of electricity as applied to his operations. State organizations are being formed for the study of electricity on the farm and Dr. White believes that the achievements of these committees are to be credited largely to the electrical fraternity. So far the most comprehensive plan for conducting these investigations has been formed in California.

L. J. Fletcher, assistant professor of agricultural engineering of the University of California, Davis, Calif., and chairman of the California Committee on the Relation of Electricity to Agriculture, spoke at length on the work as it has progressed in that state, a report of which appears on another page of this issue.

Fred R. Jenkins, of the Commonwealth Edison Company, Chicago, Ill., and chairman of the Committee on Education, described at some length the work of the committee and the detail of the courses. He also made a plea for greater support from member companies as to employee participation. Some companies already have a plan whereby they pay one-half of the cost of the course; others advance the cost and allow the employee to repay the company in small monthly installments. Mr. Jenkins felt that all companies should make some special arrangements to permit of the fullest benefit from all of the courses as they have been prepared by experts only after the most careful consideration.

The executive committee met at lunch on Friday, Nov. 21. The session lasted for several hours and the work of the various committees was dis-

cussed at length, each committee chairman giving a review report of the activities of his committee. The next conclave meeting of the Commercial National Section was set for March 17-19, 1925, at New York City.

Banquet

The conclave closed with a banquet held at the Hotel Rafael, Friday evening, Nov. 21. C. T. Hutchinson, Journal of Electricity, officiated as toastmaster and Joseph Thompson, president of the Pacific Electric Manufacturing Company, San Francisco, Calif., was the speaker of the evening. In the afternoon, prior to the banquet, many of the members made a trip to the top of Mt. Tamalpais, remaining there until after dark in order to watch the turning on of the lights in the Bay district. Special attention had been paid to the entertainment of members and guests and several unusual features were provided. The meeting was voted one of the best in the history of the Commercial National Section.

Crossed Coil Radio Beacon to Guide San Francisco Bay Ferry Boats

THE crossed coil radio beacon developed at the Bureau of Standards has been suggested as a means of guiding ferry boats across San Francisco Bay in foggy weather, and the bureau believes it will prove very useful for that purpose. This type of beacon marks out a line in the ether, and a boat equipped with an ordinary receiving set can tell whether or not she is on that line, and to which side she is off.

The San Francisco ferry boats traverse a distance of $3\frac{1}{2}$ mi. and carry a very large proportion of the city's commuting population as well as all through passengers from the east and north. At times the fog is so thick that one end of the boat can scarcely be seen from the other, and strong tidal currents are encountered. During clear weather the boats make the trip from slip to slip in approximately 15 min., but during foggy weather, when the speed of the vessels is cut down to lessen the hazard of the voyage, even if no delays are encountered, the trip may take as long as 30 min. Frequently when the fog is at its worst it is necessary for the vessels to stop completely to permit other ferries, off their course, to pass. At present nautical compasses are used in guiding the vessels across the bay, and in many cases ferries will be off their course for the greater part of the trip.

The crossed coil beacon consists of two coil antennas crossing each other at an angle of 135 deg. A coil antenna gives its loudest signal in the plane of the coil and its weakest signal in a line perpendicular to that plane. On a line bisecting the 135 deg. angle the signals from the two coils would be of equal intensity, while if the receiving set is moved to either side the signal from one coil becomes louder than the other. The coils are connected alternately to the sending set, and one of the two signal letters is sent over each coil. The operation is automatic, the letters alternating rapidly.



A Practical System of Accounting for Contractor and Dealer

By F. V. Mitchell

THE Sales Summary, as illustrated in Fig. 1, contains a list of the store charges and job charges for the month to compile the total figures for the monthly closing Journal entries.

The office copies of all store charges are numbered serially, beginning with No. 1 each month, and are entered daily on this record before posting to the customers' accounts. The total selling price and cost of each charge are entered at the same time, the latter being for the compilation of the total Cost of Store Charge Sales for the month. The charges are then posted to the debit of the individual customers' accounts direct from the office copies, using the entry numbers marked thereon as posting reference, after which they are filed in numerical order, each month separately. In the monthly closing Journal entries the total of the selling price column will be debited to Accounts Receivable Controlling Account No. 3 and credited to Sales Account No. 50 (3-Store), and the total of the cost column will be debited to Cost of Goods Sold-Material-Account No. 52A (3-Store) and credited to Merchandise Account No. 10 (3-Store).

The office copies of all job charges are numbered serially, beginning with No. 1 each month for wiring and fixtures separately, and are entered daily on this record before posting to the customers' accounts. As will be noted, the total selling prices only are entered, the cost of the jobs when finished being ascertained from the Job Cost Sheets and Work in Process Summary. The selling prices are entered at the time that contracts are taken, or if time and material work, when they are billed. The charges are then posted to the debit of the individual customers' accounts direct from the office copies.

In the Aug. 15, 1924, issue of the Journal of Electricity, pages 136-7, a complete explanation was presented of the method of noting the condition of these contracts on the individual customers' accounts for collection purposes. After the end of the month in which they are posted, any contract upon which no "N.F." (not finished) notation appears is finished and the bill should be sent to the customer, showing credit for progress payments, if any. In

the monthly closing Journal entries, the total of the job charges appearing in the Sales Summary will be debited to Accounts Receivable Controlling Account

SUMMARY OF RETURNS & ALLOWANCES - MONTH OF OCTOBER, 1924 -

- STORE CREDITS -			- JOB CREDITS -			
ENTRY No.	Selling Price	COST	ENTRY No.	HIRING	ENTRY No.	FIXTURES
1	250	175	1	2500	1	2000
2	480	320	2	1750	2	1500
3	725	545	3	5000	3	700
4	500	00	4	1000	4	1800
5	325	250	5	1500	5	2000
6	260	180	6	750	6	2250
7	195	120	7	500	7	1900
8	225	150	8	700		
9	270	180	9	4800		
10	1105	770	10	1600		
11	200	00				
12	125	90				
13	275	180				
14	740	520				
15	225	250				
TOTAL	6350	3850	TOTAL	20100	TOTAL	15700

Fig. 2.

No. 3 and credited to Unfinished Contracts Account No. 16 (1—Wiring, and 2—Fixtures, respectively).

The Summary of Returns and Allowances, as illustrated in Fig. 2, contains a list of the store credits and job credits for the month to compile the total figures for the monthly closing Journal entries.

The office copies of all store credits are numbered serially, beginning with No. 1 each month, and are entered daily on this record before posting to the customers' accounts. The total selling price and cost of each return are entered at the same time, and on allowances entries are made in the selling price column only. The credits are then posted to the credit of the individual customers' accounts direct from the office copies, using the entry numbers marked thereon as posting reference, after which they are filed in numerical order. Each month's credits are

filed separately. In the monthly closing Journal entries the total of the selling price column will be debited to Returns and Allowances Account No. 51 (3-Store) and credited to Accounts Receivable Controlling Account No. 3, and the total of the last column will be debited to Merchandise Account No. 10 (3-Store) and credited to Cost of Goods Sold—Material—Account No. 52A (3-Store).

The office copies of all job credits are numbered serially, beginning with No. 1 each month, for wiring and fixtures separately, and are entered daily on this record before posting to the customers' accounts. As most of these credits are the results of allowances made after the work is completed, and since they are

in effect a reduction of original selling price, no cost column is necessary. The credits are then posted to the credit of the individual customers' accounts direct from the office copies, using the entry numbers and job numbers marked thereon as posting reference, after which they are filed in numerical order according to the entry numbers, each month being filed separately. In the monthly closing Journal entries the total of the job credits appearing in the Summary of Returns and Allowances will be debited to Returns and Allowances Account No. 51 (1—Wiring, and 2—Fixtures, respectively) and credited to Accounts Receivable Controlling Account No. 3.

SALES SUMMARY — MONTH OF OCTOBER, 1924 —									
STORE CHARGES						JOB CHARGES			
ENTRY No.	SELLING PRICE	COST	ENTRY No.	SELLING PRICE	COST	ENTRY No.	WIRING	ENTRY No.	FIXTURES
1	745	495	36	1250	940	1	25400	1	12700
2	560	390	37	725	540	2	12750	2	7450
3	6500	4550	38	150	110	3	7800	3	21500
4	2750	1835	39	225	125	4	51200	4	5200
5	485	360	TOTAL	68490	47250	5	14650	5	10500
6	1230	860				6	8200	6	6250
7	875	585				7	124700	7	9600
8	6250	4375				8	9450	8	11250
9	925	690				9	13500	9	8500
10	1400	980				10	11500	10	22400
11	250	175				11	20400	11	6800
12	2500	1750				12	15200	12	11400
13	675	450				13	6500	13	14200
14	15000	10000				14	21700	14	7350
15	1125	785				15	17400	15	12400
16	2250	1500				16	21000	16	10200
17	145	110				17	42600	17	9700
18	1015	760				18	7250	18	6400
19	760	530				19	5400	19	5100
20	485	325				20	14700	20	20600
21	4250	2975				21	20600	21	10800
22	525	365				22	9300	22	7600
23	390	260				23	17200	23	6500
24	2750	1925				24	31800	24	5200
25	375	260				25	8750	25	5000
26	125	85				26	11900	TOTAL	254700
27	3410	2390				27	9250		
28	6000	4000				28	14800		
29	275	185				29	15900		
30	415	290				30	7500		
31	190	135				TOTAL	598400		
32	325	230							
33	540	405							
34	225	170							
35	410	305							
Forwarded	66130	45485							

Fig. 1.

Electrical Construction

By E. Earl Browne

THE character of conduit jobs is such that unit prices per outlet or circuit, due to varying installation conditions, are not sufficiently accurate to merit the consideration given to these unit prices on knob and bushing jobs. One of the reasons for this is the fact that in most cities conduit construction to date has been used very little in the single-family or flat buildings. Another factor is the fact that since the class of construction of walls, floors, ceilings and partitions vitally affects the amount of material entering into an outlet or circuit, in an apartment, store, loft, office, hotel, industrial or commercial building, it is absolutely necessary to make a study of the cheapest and best methods of making the electrical installation.

This applies particularly to the so-called "roughing-in" of conduit, outlets, and panel boxes. The variations that may occur in the length of circuit runs from outlet to outlet may be as much as 50 per cent, due to the requirements on the part of the architect or engineer that in the case of a wood joist job there be no cutting of the joists at more than a specified distance from a wall or bearing partition. Such a requirement signifies that where runs are made at right angles to the joists it is necessary to break in and out from the outlet the specified distance from the wall or partition. This means that if two outlets are 15 ft. apart and the distance from the wall or partition to the outlet in each case is 5 ft. and the specifications call for a maximum of 1 ft. for the cutting of the notch in the joists, the run from outlet to outlet will be $15 + (5 - 1) + (5 - 1) = 23$ ft.

In the case of reinforced concrete construction many engineers will not allow any pipe larger than $\frac{3}{4}$ in. to be put in the slab. When it is considered that the 1920 Code allows six No. 14 wires in a $\frac{3}{4}$ -in. conduit that is not over 30 ft. long, and the 1923 Code allows a maximum of seven No. 14 wires in a $\frac{3}{4}$ -in. conduit for any length, the stipulation that pipe larger than $\frac{3}{4}$ in. may not be laid in the concrete means that it is not permissible to install a multiple run of four circuits in one conduit. The stipulation also requires that all 1-in., $1\frac{1}{4}$ -in. and larger sub-feeder conduits must be run exposed and therefore at right angles to the outside walls instead of a straight line as would be the case if they were permitted to be run in the concrete.

Some wood joist jobs have a $\frac{7}{8}$ -in. strip between rough floor boards and finished floor; others have a $\frac{7}{8}$ -in. strip between joists and ceiling. In both these cases a $\frac{1}{2}$ -in. conduit would be the maximum size conduit permissible which means that but two circuits of No. 14 wire can be run in that conduit. In the case of exposed work there are also many conditions, either structural or imposed by the specifications, that make it impossible to arrive at any proper unit of cost per outlet or circuit; for instance, the breaking around all beams with "L" type of condulets or other fittings is often required in lieu of an offset in the conduit. It is therefore necessary in an all-metal installation to measure all material, and from the list so compiled apply experience and best

judgment as to the amount of labor which will be required to install this material, keeping always in mind any unusual conditions of construction, delay, traveling time, etc., and applying these either as separate items in addition to the regular cost or as additions to the regular unit cost.

To use a definite example, assume that the men receive \$8.00 for an eight-hour day and require the payment of traveling time outside of certain geographical limits and that this time amounts to $1\frac{1}{2}$ hours per day per man. The unit cost per hour will be worked out as follows:

Two men at \$8 per day	\$16
Automobile, 30 miles, at 10c.	
per mile	\$3
Total.....	\$19

$\$19 \div 13$ (number of man hours) \$1.46 per hr. per man

The above assumes that the work can be handled better by two men; if one man can do the job the cost per hour would be:

$\$8 + \$3 = \$11 \div 6\frac{1}{2}$ (number of man hours) = \$1.70 per hr.

The logical subdivisions of the costs of direct labor units are as follows:

- Locating and setting ceiling outlets
- Locating and setting bracket outlets
- Locating and setting switch outlets
- Locating and setting convenience outlets
- Locating and setting floor outlets
- Locating and setting signal outlets
- Locating and setting cabinets
- Cutting, threading, fitting and fastening of conduit
- Installing, fitting and fastening of elbows, bends, etc.
- Fishing, pulling, splicing of circuit wires
- Fishing, measuring, cutting and pulling of feeder, sub-feeder and service wires
- Installing and connecting of single pole switches
- Installing and connecting of three-way switches
- Installing and connecting of four way switches
- Installing and connecting of convenience outlets
- Installing and connecting of floor outlets
- Installing of cabinet doors and trims or door and gutter linings
- Installing and connecting of panel boards.
- Installing and connecting of signal apparatus
- Installing and connecting of service, metering, feeder and sub-feeder switches.
- Installing and connecting of all fixtures
- Connecting of motors
- Installing and connecting of starters.

A convenient arrangement of cost data could be made about as shown in Fig. 1 with such modifications as best suit the individual or class of work usually performed.

From even a casual glance at the number of items making up a conduit job any one can see that the more closely an estimate is detailed the greater the accuracy of the finished figure. The contractor can see also how impossible it is to formulate, with any degree of safety to the contractor and justice to the owner, a unit price as is being done by some of the "guestimators" in the business.

	FLOORS AND CEILINGS							PARTITIONS AND WALLS					COLUMNS			
	RE- INFORCED CONCRETE	STEEL PAN CONST- RUCTION	WOOD JOISTS NOTCHED	WOOD JOISTS 7/8" STRIP OVER ROUGH FLOOR	WOOD JOISTS 7/8" STRIP BETWEEN JOIST AND RAILING	FURRED	EXPOSED ON WOOD	EXPOSED ON CONCRETE	WOOD STUDS	TILE	BRICK	CONCRETE	2 SOLID	STEEL	CONCRETE	WOOD
CEILING OUTLETS																
BRACKET OUTLETS																
SWITCH OUTLETS																
CONVENIENCE OUTLETS																
FLOOR OUTLETS																
SIGNAL OUTLETS																
1/2 inch																
3/4 inch																
1 inch																
1/2 inch																
3/4 inch																
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500,000																
600,000																
750,000																
1,000,000																
SINGLE POLE SERVICE																
3 WIRE SERVICE																
4 WIRE SERVICE																
CONVENIENCE OUTLETS																
FLOOR OUTLETS																
2 TO 8																
10 TO 20																
22 TO 36																
38 AND OVER																
30 AMPERES																
60 "																
100 "																
200 "																
400 "																
30 "																
60 "																
100 "																
200 "																
400 "																
600 "																
30 "																
60 "																
100 "																
200 "																
400 "																
600 "																
800 "																
UP TO 5 H.P.																
7 1/2 TO 25																
UP TO 5 H.P.																
7 1/2 AND 10																
15 TO 25																

Fig. 1.

Treatment for Electrical Shock*

AN accidental electrical shock usually does not kill at once, but may only stun the victim and for a while stop the breathing. The shock is not likely to be immediately fatal, because:

(a) The conductors may make only a brief and imperfect contact with the body.

(b) The skin, unless it is damp with perspiration or wet, offers some resistance to the current.

The life of the victim depends upon the prompt and continued use of artificial respiration. The reasons for this are:

(a) The body continuously depends on an exchange of air, as shown by the fact that we must breathe in and out about fifteen times a minute.

(b) If the body is not thus repeatedly supplied with air, suffocation occurs.

(c) Persons whose breathing has been stopped by electrical shock have been reported restored after artificial respiration has been continued for approximately four hours, and the treatment should be continuously applied until rigor mortis (stiffening of the body due to death) sets in.

The Schafer, or "prone pressure" method of artificial respiration, slightly modified, is illustrated and described in the following resuscitation rules.

Aid can be rendered best by one who has studied the rules and has learned them by practice on a volunteer subject.

INSTRUCTIONS FOR RESUSCITATION

Follow These Instructions Even if Victim Appears Dead

I. Free the Victim From the Circuit Immediately

1. Quickly release the victim from the current, being very careful to avoid receiving a shock. Use any dry non-conductor (rubber gloves, clothing, wood, rope, etc.) to move either the victim or the conductor. Beware of using metal or any moist material. If both of the victim's hands are grasping live conductors endeavor to free them one at a time. If necessary shut off current.

Begin at once to get the subject to breathe (resuscitation) for a moment of delay is serious. Use "Prone Pressure Method" for four (4) hours if necessary, or until a doctor has advised that rigor mortis has set in.

Observe the Following Precautions

(a) The victim's loose clothing, if dry, may be used to pull him away; do not touch the soles or heels of his shoes while he remains in contact—the nails are dangerous. If this is impossible, use rubber gloves, a dry coat, a dry rope, a dry stick or board, or any other **dry non-conductor** to move either the victim or the conductor, so as to break the electrical contact.

(b) If the bare skin of the victim must be touched by your hands, be sure to cover them with

rubber gloves, mackintosh, rubber sheeting or dry cloth; or stand on a dry board or on some other dry insulating surface. If possible, use only **one** hand.

If the man receives a shock while on a pole, first see that his belt is secure around the pole, if possible above cross-arm so victim will not fall, then break the current. Pass a hand-line under his arms, preferably through his body belt, securely knot it, and pass the end of the line over the first cross-arm



Fig. 1.

above the victim. If you are alone, pass the line once around this cross-arm. If you are not alone, drop the line to those at the base of the pole. As soon as the rope is taut, free the victim's safety belt and spurs and descend the pole, guiding the victim.

2. Open the nearest switch, if that is the quickest way to break the circuit.

3. If necessary to cut a live wire, use an ax or a hatchet with a dry wooden handle, turning your face away to protect it from electrical flash.

II. Attend Instantly to Victim's Breathing

1. As soon as the victim is clear of the live conductor, quickly feel with your finger in his mouth and throat and remove any foreign body (tobacco, false teeth, etc.). If the mouth is tight shut, pay no attention to the above-mentioned instructions until later, but immediately begin resuscitation. The patient will breathe through his nose and after resuscitation has been carried on a short time, the jaws will probably relax, and any foreign substance in the mouth can be removed. Do not stop to loosen the patient's clothing; **every moment of delay is serious.**

2. Lay the patient on his belly, one arm extended directly overhead, the other arm bent at elbow and with the face resting on hand or forearm so that the nose and mouth are free for breathing. (See Fig. 1.)

3. Kneel, straddling the patient's hips, with the knees just below the patient's hip bones or opening of pants pockets. Place the palms of the hands on the small of the back with fingers resting on the ribs, the little finger just touching the lowest rib, the thumb alongside of the fingers, the tips of the fingers just out of sight. (See Fig. 1.)

*Reprinted by courtesy National Electric Light Association.



Fig. 2.

4. With arms held straight, swing forward slowly so that the weight of your body is gradually brought to bear upon the subject (see Fig. 2). This operation, which should take from two to three seconds, **must not be violent**—internal organs may be injured. The lower part of the chest and also the abdomen are thus compressed, and air is forced out of the lungs, the diaphragm is kept in natural motion, other organs are massaged and the circulation of the blood accelerated.

5. Now **immediately** swing backward so as to completely remove the pressure, thus returning to the position shown in Fig. 3. Through their elasticity, the chest walls expand, and the pressure being removed the diaphragm descends, and the lungs are thus supplied with fresh air.

6. After two seconds swing forward again. Thus repeat deliberately twelve to fifteen times a minute the double movement of compression and release—a complete respiration in four or five seconds. If a watch or a clock is not visible, follow the natural rate of your own deep breathing; the proper rate may be determined by counting—swinging forward with each expiration and backward with each inspiration.

7. As soon as this artificial respiration has been started and while it is being continued, an assistant should loosen any tight clothing about the patient's neck, chest or waist. **KEEP THE PATIENT WARM.** Place ammonia near the nose, determining safe distance by first trying how near it may be held to your own. Do not give any liquids whatever by mouth until the patient is fully conscious.

8. Continue artificial respiration without interruption (if necessary, for four hours) until normal breathing is restored. Cases are on record of success after three and one-half hours of effort. The ordinary tests for death are not conclusive in cases of electric shock and doctors must be so advised by **YOU**, if necessary.

9. When the patient revives, he should be kept prone (face down)—and not allowed to get up or be raised under any consideration unless on the advice of a doctor. If the doctor has not arrived by the time the patient has revived, he should be given some stimulant, such as one teaspoonful of aromatic spirits of ammonia in a small glass of water, or a drink of hot ginger tea or coffee.

The patient should then have any other injuries

attended to and be kept warm, being placed in the most comfortable position.

10. Resuscitation should be carried on at the nearest possible point to where the patient received his injuries. He should not be moved from this point until he is breathing normally of his own volition, and then moved only in a lying position. Should it be necessary, due to extreme weather conditions, etc., to move the patient before he is breathing normally, he should be kept in a prone position and placed upon a hard surface (door or shutter) or on the floor of a conveyance, resuscitation being carried on during the time that he is being moved.

11. A brief return of spontaneous respiration is not a certain indication for terminating the treatment. Not infrequently, the patient, after a temporary recovery of respiration, stops breathing again. The patient must be watched, and if normal breathing stops, artificial respiration should be resumed at once.

III. Send for a Doctor

If other persons are present when an accident occurs, send one of them for a doctor without a moment's delay. If alone with the patient, do not neglect the immediate and continued resuscitation of the patient for at least one hour before calling a doctor to assist in further resuscitation efforts.

A published, up-to-date list of doctors posted by the company is recommended.

IV. First Care of Burns

When natural respiration has been restored, burns, if serious, should be immediately attended to while waiting for the doctor to arrive.

A raw or blistered surface should be protected from the air. If clothing sticks, do not peel it off—cut around it. The adherent cloth, or a dressing of cotton or other soft material applied to the burned surface, should be saturated with picric acid (0.5 per cent). If this is not at hand, use a solution of baking soda (one teaspoonful to a pint of water), or the wound may be coated with a paste of flour and water, or it may be protected with vaseline, carron oil, olive oil, castor oil or machine oil, if clean. Cover the dressing with cotton, lint, clean waste, clean handkerchief, or other soft cloth, held tightly in place by a bandage.

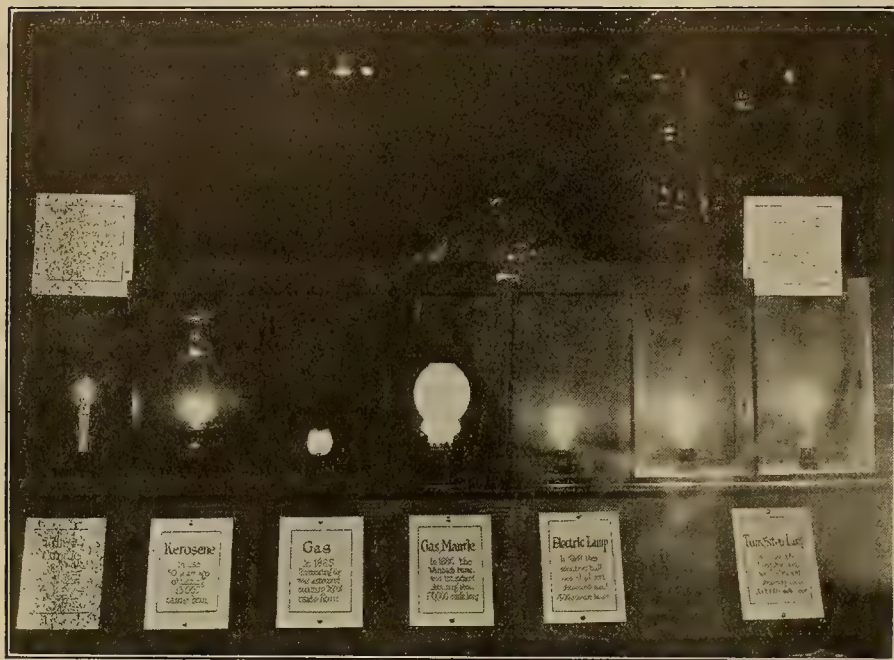
The same coverings should be lightly bandaged over a dry, charred burn, but without wetting the burned region or applying oil to it.

Do not open blisters.



Fig. 3.

JOBBER, DEALER AND SALES AGENT



Display showing the evolution of light presented by the Electric Lighting Supply Company of Los Angeles.

Evolution of Light Pictured in Window Display

The Electric Lighting Supply Company of Los Angeles Uses Its Window to Show Advance in Artificial Lighting

In winter I get up at night
And dress by yellow candle light.

But that poem is way out of date, as evidenced by the unique window display recently shown by the Electric Lighting Supply Company of Los Angeles, Calif. The display was designed to illustrate the changes that have taken place in lighting methods during the last century.

A century ago our grandfathers considered the tallow candle the latest thing in the line of illumination. And most of them were lucky to have that, a sperm oil lamp being the general means of lighting.

About fifty years later the candle and the sperm oil lamp were discarded, and a new means of illumination, the kerosene lamp, was introduced. From this the public obtained 13,000 candle hours, against that of 9,000 produced by the tallow candle.

Still later, in about 1885, a German inventor introduced illuminating gas on the market. However, for some considerable time this means of lighting was only on exhibition at the museums and was called "blue ghost."

The following year, 1886, another step was taken and the Welsbach burner was announced, and two years later the first electric lamp was made.

In 1907 the tungsten lamp was introduced, obtaining about 200,000 candle hours, or twenty times the amount of a century back. But how much more are we paying today? Statistics show that

the average American family is spending \$22 annually, which is exactly the same amount of money invested for light one hundred years ago.

As may be seen from the accompanying illustration, all of the various forms of illumination were reproduced by the Electric Lighting Supply Company in its display, and the placards were used to explain the efficiency of the various illuminants. Each typical illuminant was enclosed in a separate cabinet, open at the front and top. At night the relative amount of light given off by each was thus forcefully shown to the pedestrians who stopped to investigate the company's display.

Utility Exhibits Model Electric Kitchen at County Fair

The exhibit of the Coast Counties Gas & Electric Company, Santa Cruz, Calif., at the Santa Cruz County Fair held in that city recently took the form of a model electric kitchen. Proper illumination, electric equipment and more convenient arrangement were the keynotes of the display. The kitchen was furnished with an electric range and water heater and a number of smaller appliances such as a toaster, percolator, portable heater and similar conveniences. Hot biscuits, roast ham and other delicacies prepared by the Coast Counties demonstrator and home economist gave substantial proof of the efficacy of the electric range.

By an arrangement of wings at each end of the kitchen setting different models of electric ranges were shown, the use of colored spot reflectors making this part of the exhibit particularly attractive.



Model electric kitchen displayed by the Coast Counties Gas & Electric Company at the Santa Cruz County Fair.



Exterior views of the model dairy and the farmhouse that were part of the Puget Sound Power & Light Company's exhibit.

Comprehensive Electric Exhibit at State Fair

Puget Sound Power & Light Company Builds Model Farm Showing Variety of Home and Farm Appliances to Crowds

Probably the most complete and comprehensive exhibit of the application of electricity to farm life ever displayed in the Northwest was that of the Puget Sound Power & Light Company, at the Western Washington State Fair, Puyallup, Wash., Sept. 29 to Oct. 5. The excellence of the exhibit was attested to by the public interest which was so great that crowds had to wait to be conducted through in small groups.

The exhibit occupied half of a new building, 170x70 ft., built at the fair grounds primarily for the electrical industry. In this space were built a permanent farm house and outbuildings representing a model farm in miniature. The home was completely equipped with lights, range, water heater, dish washer, washing machine, ironer, motor-operated oil-burning heating plant, and all the small household devices for comfort and convenience. Domestic water was

supplied by an automatic, motor-driven household water system.

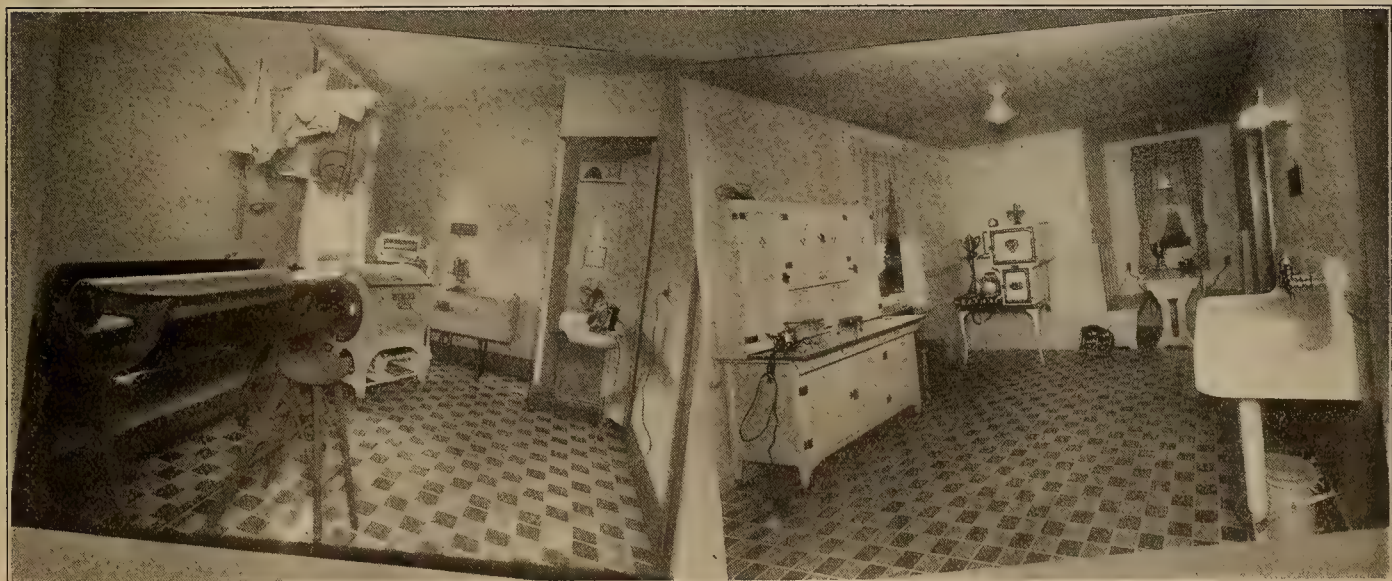
The blacksmith and repair shop building, adjoining the dwelling house, was completely electrified, while outside, a modern irrigation system using a motor-driven pump was shown. The chicken house was equipped with electrically heated incubators and brooders, and the silo was filled by a motor-driven cutting machine.

One of the finest and most interesting units of the exhibit was the model dairy, in which electric milkers, separators and bottle washers were featured. In this part of the exhibit the company cooperated closely with the state dairy department to show the most modern sanitary methods advocated by the department.

The idea of the exhibit was worked out by the sales department of the Puget Sound Power & Light Company,

and put into effect largely through the efforts of R. T. Sinex, of the drafting division of the company, who designed and superintended construction of it. Thorough cooperation was obtained from the manufacturers of the appliances and equipment demonstrated, and all concerned were rewarded by the fact that the exhibit drew greater crowds than any other single feature of the fair. The success of the venture contributed to the determination of the company to make the event an annual one, and further advances in the art of telling the electrical story may be expected next year.

The Jack Frost Electric Company, 501 Union Avenue, Portland, Ore., is the name of a new retail electric shop. It is located in one of the main retail districts of the east side where, with an attractive interior arrangement and modern window lighting, it is appealing to the shoppers of that district with a complete line of small appliances as well as the Thor line of washing machines and ironers and Premier vacuum cleaners.



The rooms in the farmhouse were also fitted with modern electrical appliances so that the housewife might do her work with as little effort as necessary.

Thank You!

YOUR purchase is appreciated and so we "thank you." We hope you will patronize us again.

We aim to make our store and our business as attractive as any down-town establishment. If you can suggest any improvements please let us know.

WESTWOOD ELECTRIC CO.

1608 OCEAN AVE
PHONE RAND 121

SPECIALISTS IN ELECTRICAL APPLIANCES
VICTROLAS - VICTOR RECORDS

It pleases the customer to know that the merchant appreciates getting the business

Do You Say "Thank You" When Money is Received?

Two San Francisco Dealers Use Specially Designed Slips and Cards to Thank Their Customers

By CLOTILDE GRUNSKY

"Thank you. Here is your change. Please call again."

"That's one reason why I go there in preference to any other store. Frankly, I like to be thanked when I turn my money over to the girl at the cash register." How often have you heard that and felt the same way? When you make a purchase don't you like to know that the merchant appreciates your trade? Don't you feel more like reaching into your pocket for the money when you know that you will be thanked by a smiling salesman? Of course you do and the people that trade at your store react to a smile and a "Thank you" in the same way that you do.

Who likes to trade at a store where the customer is made to feel that the salesman is doing him a favor to wait upon him? Who likes to receive the impression that the merchant feels that it is his right to take the money from the purchaser and that the seller is doing the buyer a favor by condescending to allow the latter to trade in the store?

Maybe it is the fact that competition for business has made it necessary for the merchant of today to show the customer that he appreciates his business and maybe the merchant has, of his own volition, decided that the customer is entitled to courteous and appreciative treatment. Regardless of what the cause is, it must be admitted that the buying public has come to realize that the purchaser is entitled to every consideration at the hands of the salesman. If Mrs. Brown cannot get courteous service at one store, she knows there are other establishments anxious to get her trade and she will go there. If, however, the clerks at Smith's welcome her with a smile and thank her when she makes a purchase, she will prefer to trade at the store with which she is acquainted and it will take considerable effort to draw her over to Black's across the street.

Purchasers of electrical appliances are the same class of people that appreciate courtesy in other retail establishments. They expect courteous treatment and it is up to the electrical dealer to see that they receive it. A "Thank you" given in receipt for the pur-

chaser's cash will often round out the favorable impression that the salesman has made upon the customer and will make certain the good will of the individual. And the best part of it is that the investment in "Thank you" costs the dealer nothing and the return on the investment is limitless.

An electrical dealer with a store in the residential section of San Francisco has decided that a small investment in "Thank you" would bring in excellent returns. Eric M. Unmack, the manager of the Westwood Electric Company, in addition to giving instructions that customers were to be personally thanked for any business that they might do with the store, recently secured a large supply of small paper slips that carried the "Thank you" to the purchaser's home. Directions were given that one of the slips were to be placed inside of every small package that was taken from the store. Thus when a lamp or any small appliance is bought from the Westwood Electric Company, one of the slips is wrapped inside of the package so that when the customer arrives at home the "Thank you" message is presented again.

The slip creates good will for the dealer and in addition impresses the

firm name upon the mind of any new customer. The address and telephone number appear on the slip so that the customer will have no trouble in either locating or telephoning the store. As the concern is classed as a neighborhood store, the statement on the slip, "We aim to make our store and our business as attractive as any down-town establishment," is particularly useful.

The "Thank you" slips are used only in connection with the smaller appliances. To purchasers of washing machines, ironers, and vacuum cleaners Mr. Unmack writes a personal letter thanking them for their patronage and stating that it is the desire of the Westwood Electric Company to see that the purchaser is entirely satisfied with the appliance that the company has recently delivered.

The Levy Electric Company has also prepared a printed card that is designed to inform the public that the concern is anxious to give courteous service to its customers. The card used by the Levy company has been found to be particularly useful in connection with handling complaints of customers. In case a dissatisfied customer enters the store in an excited condition, the clerk politely refers the question to the manager of the store. The manager after ascertaining the cause of the trouble endeavors to adjust the matter to the customer's satisfaction and just before he or she leaves the store, the manager offers the card, which on the front side carries the following selected inscription:

"THE OPTIMIST'S CREED"

"Promise Yourself—

"To be so strong that nothing can disturb your peace of mind. To talk health, happiness and prosperity to every person you meet. To make your friends feel that there is something in them. To look at the sunny side of everything and make your optimism come true. To think only of the best, to work only for the best and to expect only the best. To be just as enthusiastic about the success of others as you are about your own. To forget the mistakes of the past and press on to the greater achievements of the future. To wear a cheerful countenance at all times and give every living creature you meet a smile. To give so much time to the improvement of yourself that you have no time to criticize others. To be too large for worry, too noble for

1898

Twenty-sixth Anniversary of Intelligent Electric Service

1924

IF you could turn back twenty-six years, you would hardly know that the electrical business existed. Yet, that is when the Levy Electric Co. came into existence.

During this quarter century rapid strides have been made in the electrical industry toward lightening the burden of the housewife; with the result that today her work thru the convenience of electricity is really a pleasure.

During this period our life's work has been a study of electrical appliances and materials, choosing from the markets of the world only standard articles, selling at fair prices, under a guarantee, appliances that we know will satisfy our customers. Around this and the giving of "Intelligent Electric Service," we have built our reputation, of which we are justly proud.

If you are in need of any electrical appliances, radio supplies or have any appliances that need repairing or lights you may want changed, or possibly wish to install a convenience outlet or two, call Prospect 230 and our Service department will see that prompt, intelligent and trained service is at your command.

LEVY ELECTRIC COMPANY

1230 Polk St.

San Francisco

Prospect 230

The reverse side of the Levy Electric Company card carries the firm's business message.

anger, too strong for fear, and too happy to permit the presence of trouble."

The message is printed on a good grade of buff colored paper in three colors. It presents an attractive appearance and carries the message that it was presented by the Levy Electric Company. On the reverse side, the company has prepared a message featuring the service that it has given to the public in the time that it has been in business in San Francisco. Address and telephone number appear in promi-

nent positions at the bottom of the card. In this way the dealer's name was kept before the reader.

The dominant message behind both of these card forms is that the dealer appreciates the business of the customer. Both dealers hope to make a return customer of the purchaser and desire to give the best attention possible to the wants of the individual. The slips and cards used by each dealer could be secured at nominal cost and in all probability would add considerably to the amount of business transacted.

Are Electrical Dealers Making the Most of Radio?

Music Dealers Cornered the Talking Machine Business and Are Now Competing in Force in the Radio Field

By E. F. McDONALD, Jr.,
President, Zenith Radio Corporation

The electrical dealer has a big lesson to learn from the music merchant. This is a rather startling statement to make, but nevertheless it is perfectly true that unless the electrical dealer wakes up to the need of advertising, the radio end of his business will slip out of his hands.

Take for example the relative amount of advertising done by the two classes of dealers. In a recent Sunday issue of the Chicago Tribune there appeared

8,617 lines of music dealers' advertising
714 lines of radio manufacturers' advertising
196 lines of electrical dealers' advertising on
washing machines
434 lines of radio dealers' advertising.

Not a line of electrical dealers' advertising of radio apparatus.

Time was when the talking machine was handled by the hardware dealer, the nickelodeon, the penny arcade, and the drug store. When the music dealer saw that this new toy was cutting into his business, and upon inquiry became convinced he could sell the talking machine with profit to himself, he added it to his other merchandise and eventually took the business away from the others by dint of advertising. Now radio is cutting into the music business and is being eyed by the music dealer not with reproach, but with an interest that bodes ill to the electrical dealer. Undoubtedly, the electrical dealer will lose his hold on radio if he doesn't make a determined effort. He will have to use printers' ink—lots of it.

There were a great many people with a few hundred dollars to spend who read the Chicago Tribune above referred to, and who were so impressed by the preponderance of the piano man's arguments in favor of a new piano that on Monday morning, or some time during the following week, they purchased a piano, whereas they might have been more easily persuaded to invest their money in a radio set. But the radio dealer did not shout loud enough. And the electrical dealer stood by speechless. On this occasion he made no attempt to cajole the public into buying some of his wares, including radio.

When one stops to think of the difference in intrinsic interest between a piano and a radio set, the music merchant is doing and has done a very creditable job. He has convinced the American public that the home is incomplete without a piano—without an article which only a very few people will use, if at all. For the most part,

the piano, just as any piece of furniture, stands quietly and unobtrusively in the home. Once in a while, it will be pressed into service when a visitor able and willing to play will call forth some charms hidden back of the front panel. If there are children in the family, the piano, unwillingly, to be sure, hurts the ears of those who have to listen to the efforts, feeble or otherwise, of those who have hopes of learning how to play after five years of practicing. But the piano man has said that the piano is necessary in the home. He has said that so much and so often most of us have taken him at his word.

On the other hand, the radio set, which is really a fascination, even to such an extent as to encroach upon the convention and propriety of "early to bed and early to rise," is only known as a truly entertaining device by comparatively a handful of people. Of course, it is true that a good many radio sets are being sold by word-of-mouth recommendation. But widespread and countless sales readily would follow if the electrical dealer shouted his wares from the housetops as does the music merchant his.

The alarming thing for the electrical dealer is that the music merchant is beginning to realize radio is a suitable adjunct to the music business. It is sold in precisely the same way as a piano or a talking machine. And already we hear of phenomenal success here and there of music houses handling radio. Without doubt, the largest radio dealer in the city of Chicago is a music house.

The electrical dealer better beware of the music merchant's competition! If he doubts what I say, let him go through half a dozen music stores and pretend being interested in a piano or a talking machine. If he holds his eyes wide open, he will notice first of all the attractiveness of the store; in the next place, the ready and gracious attention on the part of employees; and in the third place, subtle, yet aggressive salesmanship; finally, unusual equipment, such as booths, comfortable chairs, artistic touch of pictures, and furnishings in general. A comparison of the music merchant's place of business with his own might be very helpful. No need of going into any greater detail, for I simply want to point out the fact that there is even on the surface quite a difference to the eye of the casual observer, between the music merchant's

place of business and that of the electrical dealer.

And there is a corresponding difference between their methods of doing business, the principal one being that to which I have already referred—advertising.

If it were not for advertising, the music merchant could never have become the successful business man that he is. If this observation of mine will excite the curiosity of the electrical dealer to see himself in perspective, I shall have accomplished all that I possibly could hope to do. He will see himself in true proportion by making the visit that I have attempted to describe and also by occasionally looking through the newspapers to see the relative bid for business that is being made as between him and the music merchant.

And as a parting thought, any man that advertises radio this summer will be kept busy, because radio's appeal does not lessen in the warm weather, even though static will shut off the more remote stations. Good radio sets will furnish diversion in abundance both at home and while summering away. Radio becomes a seasonal business for only such as make it so. The live ones will advertise this summer and they will do as well as in the winter, because competition will be negligible—the dead ones will spend the time complaining about the summer.

Electrical Installation Stands Up for Twenty-Six Years

A little over twenty-six years ago H. N. Beecher, now chief electrical inspector of Los Angeles, Calif., made an electrical installation in the Hotel Green at Pasadena, Calif. In accordance with common practice at that time, paper conduit with tin sleeves was used and the wire was standard rubber covered. The building, a class



H. N. Beecher, chief electrical inspector of Los Angeles, Calif., installed this equipment over twenty-six years ago and recently had an opportunity to inspect it again when the building was remodeled.

A structure, is now being remodeled into apartments and Mr. Green recently had the opportunity of inspecting again the work he had installed. The conduit and wire were both found in excellent condition; in fact, little, if any, wear was discernible. Due to the extensive remodeling involved in the present rearrangement of the building the old conduit is being replaced with flexible metallic conduit.

Sangamo Electric Company, Springfield, Ill., has published Bulletin No. 68, descriptive of its Type N amperehour meters. It is well illustrated with cuts of meters and parts.

INDUSTRIAL NEWS



To Continue Hetch Hetchy Work Despite Controversy

As the result of considerable discussion by the San Francisco Board of Supervisors on the Hetch Hetchy water supply project of the city, on Nov. 24, Ralph McLeran, acting mayor, ordered the Board of Public Works to discontinue work on certain parts of the project, where about 500 men are employed. An injunction secured by a taxpayer, holding up the stop order, prevented the closing down of work. Pending court action on this injunction the construction is continuing with full crews.

Supervisor McLeran, during the absence from the city of Mayor Rolph, brought before the Board of Supervisors figures to show that the 1910 bond issue for \$45,000,000 was practically exhausted and that there were insufficient funds for completing the mountain division. In addition to the order to stop work, the acting mayor endeavored to secure the passage of an ordinance repealing the 1913 ordinance that gave the city engineer complete authority to make plans, let contracts and purchase materials for "the acquisition, construction and completion of the municipal water supply." This endeavor has been unsuccessful up to Nov. 29. Mayor Rolph is understood to be opposed to any Hetch Hetchy shutdown.

The fundamental difference between the acting mayor and the city engineer seems to be in the allocation of moneys received (1) from the sale of power from the Cherry Creek plant and (2) from operation of the Hetch Hetchy railroad. "Money received from these two sources," Mr. O'Shaughnessy, city engineer, states, "amounts to \$1,500,000, from which we got back only \$300,000, so there is \$1,200,000 from these sources that should be credited to the project."

In an interview with a McGraw-Hill Company representative, Mr. O'Shaughnessy said that, taking into account the railroad earnings, proceeds from power sales and salvage on construction equipment, there are still ample funds available from the 1910 bond issue for the completion of the mountain division. To stop the work just at this time would cause extensive and wholly unnecessary waste due to the disorganization of crews in camps that are on the point of finishing up their work, not to mention the loss of materials at the Early Intake diversion dam and other losses that would attend a sudden and unexpected shutdown.

The present status of the work is as follows: The placing of concrete lining in the 18-mi. tunnel can be completed in about 40 days at the present rate of 1,000 ft. per day. Work at Early Intake can be finished within two months, and this, plus the completion of the South Fork bridge, of which only about 100 ft.

remains to be erected, will practically finish all construction on the mountain division or upper end of the project. Moccasin Creek power house and the 154,000-volt transmission line to San Francisco are expected to be ready for service early next year.

Utilities Commissioners Convene at Phoenix, Ariz.

The National Association of Railway and Utilities Commissioners held its annual convention at Phoenix, Ariz., Nov. 11-14. From the points of enthusiasm and attendance, thirty-five states being represented, it was considered one of the best meetings held in years.

M. H. Aylesworth, executive manager of the N.E.L.A., briefly outlined the progress being made in interconnection and superpower systems throughout the country, and pictured the effect of this linking of systems upon the economic future of the nation. That much interest had been aroused was evidenced by the general discussion that followed. In order that those most familiar with this particular activity might have an opportunity to present the subject in all its aspects, it was decided to set apart at the next annual meeting a special day for complete discussion of the matter.

That the state commissions should retain and exercise their jurisdiction over electric utilities was cited as a necessity by Mr. Aylesworth, in speaking on this subject. He described the way power development would be hampered if, by the exercise of federal authority through a bureau at Washington, such state jurisdiction should be materially curtailed. The necessity for cooperation between the various commissions and the advantages resulting from uniformity in state regulatory practice were also stressed in this speech.

An exhaustive report made by the standing committee on government ownership strongly advocated private ownership.

The relations between the public utility commissioners and the regulated utilities was the subject of the address made by H. C. Abell, recently elected president of the American Gas Association. Other speakers were C. D. Jackson, counsel for the National Electric Light Association; J. N. Shannahan, president, American Electric Railway Association, and W. N. Sproule, president, Southern Pacific Company.

D. B. Ainey, president, Pennsylvania Public Service Commission, was elected president of the association.

City of Los Angeles Enters Joint Pole Committee.—The City of Los Angeles recently has become a member of the Joint Pole Committee in southern California.

Federal Action May Be Taken on Colorado River Projects

With the Colorado River compact as the chief issue in the state campaign, Arizona reelected Governor Hunt. This is believed to end all hope of ratifying the interstate treaty. While final action must be taken by the legislature, it is anticipated that that body will interpret the election as a mandate from the people and will preclude the ratification of the compact.

Reports from Washington indicate that it is probable that the Federal Power Commission will withhold action on Colorado River projects until it has been established definitely that the treaty will not be ratified. The legislature will be in session from January to April. Once that it is established that Arizona will not ratify the treaty it is expected that the commission will proceed with the granting of rights on the Colorado.

A new complication exists, however, in the Girard application for rights on the Colorado at Diamond Creek. Arizona has taken a position contrary to that of any other Western state in contending that Mr. Girard has lost his state rights by failure to continue construction work, regardless of the fact that he was forced to discontinue work by a federal injunction. While the Federal Power Commission is committed, morally, at least, to grant the Girard license, it is entirely possible that the issuance of the license may be delayed further pending the outcome of litigation as to the validity of his state rights.

Developments may come rapidly on other phases of the Colorado River problem. Dr. Elwood Mead, the new commissioner of reclamation, has announced that he is not committed to the Boulder Canyon dam proposal. The presidential election demonstrated anew the overwhelming popularity of private ownership of utilities. This is thought to insure the speedy demise of the Swing-Johnson bill. A report has reached Washington to the effect that Los Angeles is planning to apply for rights in Boulder Canyon with the idea of financing the development itself.

While these various matters are being determined, further engineering studies on the lower Colorado are being urged. These studies could establish more definitely than is known now the character of projects which fit best into the full development of the river. In that connection it is also being urged earnestly that immediate steps be taken to secure a treaty with Mexico to determine definitely the rights of each country in connection with the waters of the Colorado and of the Rio Grande.

Western Power Corporation Has Option on San Joaquin

An option for the purchase of the San Joaquin Light & Power Corporation has been secured by the Western Power Corporation of New York, holding company for the Great Western Power Company. According to reports from New York a purchase price has been agreed upon and negotiations have reached the point where the final exercising of the option may be expected at any time. With the accumulation of a few individual holdings of San Joaquin stock, it is reported that papers closing the deal will be signed.

Hinging upon the completion of the deal is one of the greatest hydroelectric development programs announced by a Western utility in many years. Immediately upon the consolidation of the two companies work will start on raising the Big Meadows dam at Lake Almanor 45 ft. increasing the storage capacity of this reservoir to 1,317,000 acre-ft. Lake Almanor will then have a greater capacity than the present combined capacity of all the reservoirs in the state of California. A fourth generating unit of 22,000 kw. will be also installed at the Caribou plant on the Feather River, increasing the capacity of that station to 88,000 kw.

It is also planned to interconnect the

Great Western and San Joaquin systems with a 220,000-volt tie-line extending from Brighton substation near Sacramento to Merced. This line will later be extended to Fresno. Should this line be interconnected with the 220,000-volt lines of the Pacific Gas and Electric Company and the Southern California Edison Company, California would then have a 220-kv. trunk transmission line extending from the Pit River plants on the north to Los Angeles.

The extent of the Great Western and San Joaquin systems together with the capacities of the various steam and hydro plants operated by each are shown on the accompanying map.

Closely allied with the consolidation is the announcement of the resignation of Mortimer and Herbert Fleishacker as president and vice-president respectively of the Great Western Power Company, and the sale of their holdings in the company. This marks the withdrawal of these two from the utility field in California although they still control the Northwestern Electric Company of Portland, Ore. In their places the board of directors of the company has elected Guy C. Earl as president and J. B. Black as vice-president. Mr. Earl is also vice-president of the California Electric Generating Company, a subsidiary of the Great

Western, the City Electric Company, the Consolidated Electric Company and the San Francisco, Napa and Calistoga Railway. J. B. Black was general manager of the Great Western.

High Tension Line Completed by California Oregon Company

Construction of the 110,000-volt line that will act as a new tie between the systems of the California Oregon Power Company and the Pacific Gas and Electric Company has been completed by the former company. The new line extends from the site of the Copco No. 2 plant of the California Oregon company south to Delta, Calif., from which point the Pacific Gas and Electric Company will transmit the energy at 220,000 volts on its Pit River line. An extension of the Pit River line to Delta is now being made by the latter company.

The California Oregon company's line that has been completed is known as Line 14 and is 77½ mi. long. The northern and middle sections of this line pass through flat and rolling country, whereas the southern end is in a rough and mountainous region. Two-pole, H-frame construction is used on the line on which the average span is 600 ft., the greatest being 1,539 ft.

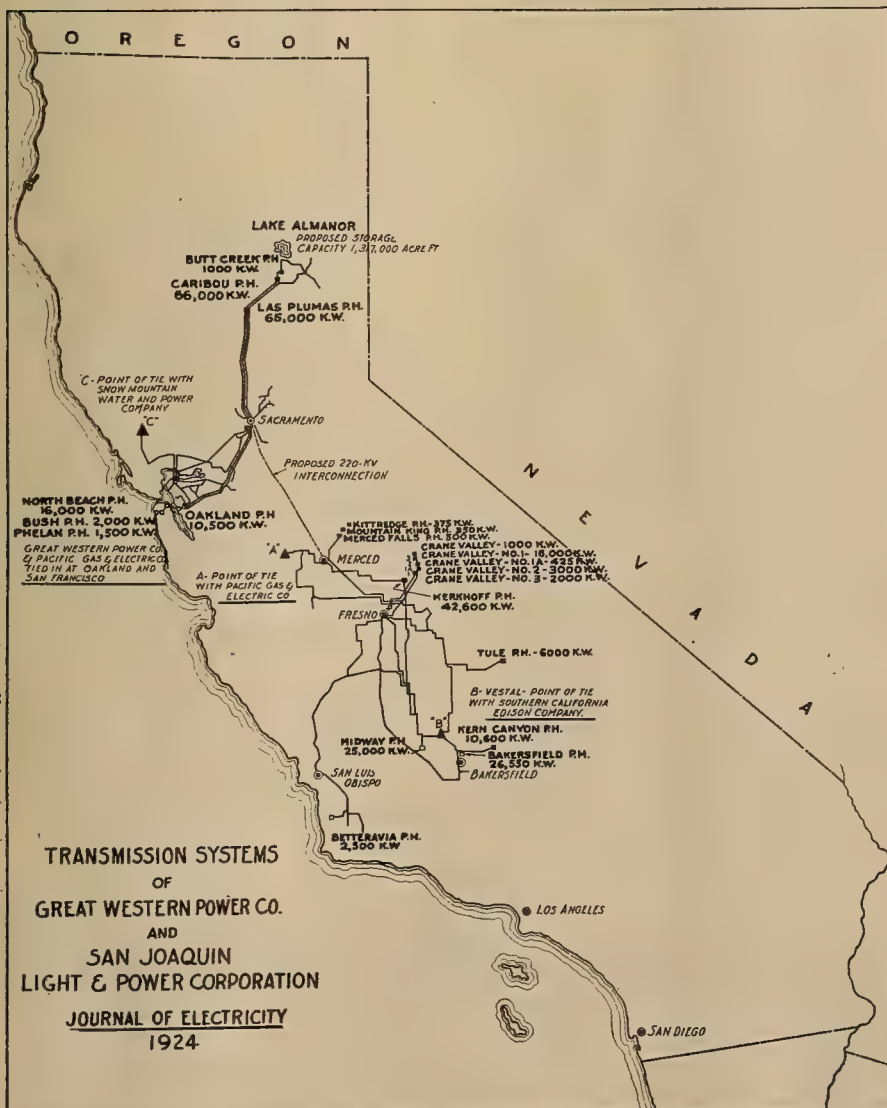
The new line, designed to transmit energy from the Copco No. 2 plant to the substation of the Pacific Gas and Electric Company at Delta, is being used at present to transmit energy generated at other plants of the Copco system. Copco No. 2 plant, now under construction, will have a capacity of 30,000 kw. The plant will probably be completed before the middle of 1925. The entire output of the plant will be wholesaled to the Pacific Gas and Electric Company.

Smiles Contests Entries Will Be Received Until Dec. 18

To permit a greater participation in the two contests being conducted by the Courteous Service Club Committee of the Pacific Coast Electrical Association, the committee has extended the duration of the contests by two and one-half weeks, making the closing date Dec. 18 instead of Dec. 1. An effort will be made to announce the prize winners in the Jan. 1, 1925, issue of the Journal of Electricity.

Answers to the contests have been coming in rapidly, and indications are that by extending the contests the Courteous Service Club Committee will have a large number of entries from which to pick the winners. Complete information regarding the contests may be secured from the announcement which appears on page 423 of this issue.

Attorney Not Needed for Conducting Business With Federal Power Commission.—Attention is being called to the fact that negotiations with the Federal Power Commission usually do not require the services of an attorney. Most of the transactions with the commission must be reduced to writing for matters of record, and only delay results when this correspondence must be carried on through a representative of the party at interest. There have been recent instances in which persons with nothing more than routine business to transact have been of the opinion that it was necessary to employ a person on the ground for that purpose.



Map of Great Western Power Company and San Joaquin Light & Power Corporation systems showing location and capacities of steam and hydro stations and proposed 220,000-volt interconnection.

Contracts for Exchequer Power Plant Equipment Awarded

The Pelton Water Wheel Company has been awarded the contract for the two 24,500-hp. vertical reaction turbines, oil pressure systems and governors for installation in the new Exchequer plant now being built by the Merced Irrigation District, on the Merced River, 35 mi. east of Merced, Calif. These turbines will be direct-connected to two 15,000-kva. generators, which will be furnished by the Westinghouse Electric & Manufacturing Company.

In the turbine equipment will be combined the most advanced features of design that have been developed by Pelton engineers and their associates of the I. P. Morris department of the Cramp Company of Philadelphia. Each unit will be equipped with a Moody spreading draft tube, sections of which are removable to facilitate inspection or replacement of runner and wearing rings. The main shaft will be hollow-bored to permit the handling of removable parts by cable from the overhead crane.

Two complete oil pressure systems are to be provided, each of a capacity sufficient to operate both governors at one time. The governors will be specially designed for complete remote control and will also include emergency shut-down and load-limiting devices.

Because of the fact that irrigation will have precedence over power in the Exchequer development, the turbines are designed to provide best efficiency under heads ranging from 300 ft. maximum to 140 ft. minimum. The Exchequer reservoir, in normal years, will impound sufficient water between the months of February and May to run the plant at full capacity for five months. The units are to be shut down entirely when the minimum head has been reached.

The power from both generators will be stepped up to 120 kv. through one bank of transformers to be furnished by the General Electric Company. A single circuit 120-kv. transmission line will tie into the existing distribution system of the San Joaquin Light & Power Corporation, which will absorb the entire output at the switchboard of the Exchequer plant.

New Line an Important Link in Puget Sound System

To improve transmission conditions in its southwestern district and to furnish additional capacity for its southern district, the Puget Sound Power & Light Company recently completed the construction of a high-tension transmission line from the Electron plant to Tenino, Wash., a distance of 38½ mi. The line, which was built under the supervision of K. C. Schluss, superintendent of power and equipment of the southwestern district, Tacoma, completes a loop taking in the White River and Electron plants and the districts around Tacoma, Olympia and Tenino, giving these districts the advantage of a double feed.

The improvement, which has cost approximately \$285,000, includes also a new substation at Fern Hill, near Tacoma, and an increase in the capacity of the Tenino substation from 1,500 kw. to 5,000 kw., which materially augments the possible supply to the southern district from the north. Other sources of supply to the southern district are a

1,500-kw. steam plant at Chehalis and a 600-kw. hydroelectric plant at Kalama.

The new line, which will be operated for the present at 55,000 volts, is constructed with clearance and insulation for 110,000 volts, and, being of 4/0 stranded copper, will have a carrying capacity at the higher voltage of more than 20,000 kw. The construction is on single poles, with the conductors suspended on two arms, one on top and two on the bottom arm. The top conductor is staggered from one side to the other on alternate poles so as to avoid having one conductor directly above the other in the same vertical plane.

Ferry Driven by Electricity Is Unique Installation

A unique application of electric power is found in an electrically driven ferry boat operating on the Willamette River at Independence, Ore. The boat is driven by a 20-hp., 440-volt, 3-phase motor, connected to side wheels through a Fordson tractor transmission, giving high and low speed and reverse. Four hundred and forty volt power is supplied by the Mountain States Power Company, Albany, to a trolley circuit consisting of three ¾-in. galvanized steel cables stretched 1,200 ft. across the river. Trolley wheels supported on a pantograph, and a three-conductor flexible cable complete the electrical connection to the motor.

The electric drive replaced a gasoline engine with propeller. Under the old system of engine drive, a round trip took from fifteen to thirty minutes, the operating cost averaged \$150 per month, and there were frequent tie-ups for repairs. With the electric drive, the ferry operates continuously and can make a round trip in less than five minutes. Over a period of five months, during the busiest season of the year, the power cost has averaged \$60 per month. The ferry is owned by the adjacent counties and renders free service.

Seattle Applies for Permit for Ruby Dam on Skagit

As a preliminary step in the continued development of the Skagit River by the city of Seattle, Wash., an application has been filed with the Federal Power Commission by that city for permission to dam the river just below the mouth of Ruby Creek. The dam, which is to be 480 ft. high and 1,000 ft. long, is to create a large storage reservoir and develop approximately 300,000 hp. As this development has been planned, the water is to be carried 3¼ mi. through a 28-ft. pressure tunnel to the power house located just above the mouth of Stetattle Creek. The site of this development is from 7 to 10 mi. above the present Gorge Creek power house on Skagit River, placed in operation by the city in September of this year. (Journal of Electricity, Oct. 15, 1924, page 304.)

Since the Gorge unit was put in service, the city officials have been considering what should be the next step in the Skagit development, opinion being divided between two possibilities. It is understood that one group of officials, including E. J. Brown, mayor, and C. F. Uhden, Skagit engineer, favors the immediate construction of the Gorge dam. This would raise the head at the present power house about 100 ft. and would permit running the present installed units at their full capacity during such time of the year as there is sufficient water in the river. Another group, however, favors the construction of the Ruby development, to increase materially the hydroelectric output of the municipal system, as well as to regulate the flow of the river, by means of the storage created, so as to deliver to the turbines in the Gorge plant an even flow of water the year round.

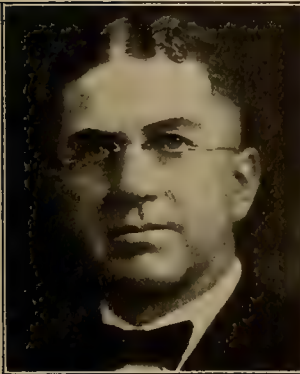
Mayor Brown has appointed J. D. Blackwell, city engineer; J. D. Ross, superintendent of the city light department, and C. F. Uhden to prepare a complete report covering all angles of both developments. No decision has been reached.



Electrically operated ferry on Willamette River that receives current from overhead trolley wires.



J. P. LOTTRIDGE.



R. B. KING.



A. N. CUDWORTH.



N. W. BROCKETT

**Northwest Association Chairman
Appointed by President**

Appointments of section chairmen for the Northwest Electric Light & Power Association have been announced as follows by President R. M. Boykin, manager southern district, Puget Sound Power & Light Company, Portland, Ore.: Chairman, accounting section, A. N. Cudworth, auditor, Northwestern Electric Company, Portland; chairman, technical section, H. H. Schoolfield, chief engineer, Pacific Power & Light Company, Portland; chairman, commercial section, J. F. Orr, sales manager, Idaho



R. M. BOYKIN

Power Company, Boise, Idaho; general chairman, public relations section, W. H. Ude, director of public relations, Washington Water Power Company, Spokane, Wash. The following are the district chairmen of the public relations section: For Oregon, J. P. Lottridge, vice-president, Eastern Oregon Light & Power Company, Baker, Ore.; for Washington, Norwood W. Brockett, director of public relations, Puget Sound Power & Light Company, Seattle, Wash.; for Idaho, R. B. King, general superintendent, Idaho Power Company, Boise. W. A. White, chief engineer southern district, Puget Sound Power & Light Company, Portland, is the new secretary and treasurer of the association.

**Seattle Takes Over Substations at
Appraiser's Price**

The City of Seattle will take over from the Puget Sound Power & Light Company the substations at North Seattle and Fremont, furnishing current for the operation of the street railway, at a total cost of \$141,317, the value agreed upon by a board of appraisers. A bill has been introduced in the council providing for payment of the award by a temporary loan from the light fund to the 1921 municipal light extension bond construction fund.

The transfer of the substations means that the city light plant will take over a load of 5,000 kw. for the operation of the street cars now furnished by the company at 1 cent per kw-hr. When the street railway lines were purchased several years ago by the city, an agreement was entered into whereby the city would take over the substations, when the city had the power to operate them, at a price to be fixed by a board of appraisers.



H. H. SCHOOLFIELD.



W. A. WHITE.



W. H. UDE



J. F. ORR

Publicity Section Reorganized at San Francisco Meeting

Plans for the coming year were outlined at a meeting of the Publicity Section of the P.C.E.A. held in San Francisco Nov. 21. A. C. Joy, San Joaquin Light & Power Corporation, chairman of the section, presided.

The section was completely reorganized along the lines suggested at the 1924 convention of the association at Coronado. The new plan calls for the organization of three bureaus, each charged with definite work in connection with the publicity and advertising campaigns of the utilities and manufacturers. The first of these is a bureau of technique composed of committees for the study of advertising, news, illustrations, motion pictures and internal publications. The better business bureau will be composed of a committee on standards and one on cooperative methods. The information bureau will act as a clearing house for the interchange of ideas and material between companies and for the spreading of general publicity stories on the industry and its progress.

The personnel of the section follows: A. C. Joy, San Joaquin Light & Power Corporation, chairman; C. H. Peirson, Southern California Edison Company, vice-chairman; F. S. Myrtle, Pacific Gas and Electric Company, secretary; B. S. Allen, Key System Transit Company; J. F. Pollard, Coast Valleys Gas & Electric Company; A. M. Frost, San Joaquin Light & Power Corporation, and G. C. Tenney, Journal of Electricity, executive committeemen.

Bureau of Technique: B. S. Allen, chairman; committee on advertising, J. C. Jordan, Pacific Gas and Electric Company, chairman; committee on news, C. H. Peirson, chairman; committee on internal publications, F. S. Myrtle, chairman; committee on illustrations and motion pictures, G. C. Tenney, chairman.

Better Business Bureau: J. F. Pollard, chairman; committee on cooperative methods, M. W. Scanlon, Westinghouse Electric & Manufacturing Company, chairman; R. D. Brigham, Great Western Power Company; V. W. Hartley, California Electrical Cooperative Campaign; A. G. Jones, General Electric Company; committee on standards, F. Z. Stone, Southern Sierras Power Company, chairman; R. E. Smith, Southern California Edison Company; C. L. Burgess, Westinghouse Electric & Manufacturing Company; W. A. Cyr, San Diego Consolidated Gas & Electric Company; C. A. Luckenbach, Los Angeles Gas & Electric Corporation.

Information Bureau: G. C. Tenney, chairman.

Minor Changes Made in Extension Rules by Oregon Commission

Because a year's experience in the operation of the electric extension rules in Oregon had demonstrated that certain changes were needed to make them more practicable, the Public Service Commission of that state recently issued an order making some modifications in them. No changes of major importance are included in the new order, which was made effective Sept. 1, 1924, but in general it may be said that the accounting requirements were considerably lightened.

The principal change to be found in the new order is in that rule requiring the repayment to the customers on an extension for which advance payments were made, of a portion of this advance payment after a period of three years, in every case in which the actual revenue from the extension was found to exceed the estimated revenue. This rule was originally designed to discourage a possible practice of underestimating revenues, and placed particularly burdensome requirements on the utility in the matter of keeping a record of revenues from such extensions. In the new order this rule was amended to read that "any customer thereon may demand a statement of the revenues derived during that three-year period from the original customers or their successors on such extension," and provides that, if such revenues are found to exceed the estimated revenues, a refund shall be made to all the customers who had thus overpaid. This amendment simply relieves the utility of accounting for these revenues except on demand, and places the burden of taking the necessary steps to secure a refund upon the customer. In order that the customer may be apprised of his rights in the matter, the new order requires that the utility shall furnish each applicant with a copy of the rules.

Christmas Sales Aids Prepared by Electrical Society

The experience of all merchandisers has shown the necessity for planning early any special campaign that they purpose conducting. The majority of electrical retailers have had previous experience in putting on special campaigns to sell electrical gifts for Christmas and have already made all plans for this year's effort. Even at this late date there are opportunities for promoting sales-developing programs.

There are plenty of tools in the industry to assist in making the 1924 Christmas campaign a success. The manufacturers all have material that lends itself particularly to influencing selection of their product. The Society for Electrical Development has produced some special material which will work in with the manufacturers' helps.

This year the society is producing a window display background panel in seven colors, 34x60 in., carrying the slogan, "Give Something Electrical"—the one adopted by the industry for the year.

A set of nine Santa Clauses (four pointing to the right and five to the left), 6 in. wide by 8 in. high, with easel background, will also be another unit of this special material. Other pieces will consist of folders, booklets, poster stamp and wreath.

To assist in ordering, standard Christmas packages of material will be made up, consisting, for example, of one background panel, one set of nine Santa Claus cutouts, one set of three wreaths, 250 booklets and 250 poster stamps, which will be sold for \$12.50. A standard package costing \$10 will consist of the same quantities of material, but they will include folders instead of booklets. Still another package costing \$3 will consist of one window display screen, a set of nine Santa Claus cutouts and a set of three wreaths.

Good Progress Is Made on Lake Cushman Power Project

In spite of several sudden floods that temporarily stopped work on the dam, good progress is being made on the Lake Cushman power project of the city of Tacoma, Wash. Construction camps, compressor plant, sand and gravel washing plant and concreting plant have been completed and put in service. At the middle of November concrete on the dam had been brought up to a height of about 65 ft. above the lowest point in the foundation; the tunnel which will convey water from the reservoir to the power house had been driven; some work had been done on the power-house site, and concrete foundations were being put in for the outdoor-type high-tension switches.

Present plans call for the placing of the concrete lining in the tunnel during the winter and for the continuation of work on the transmission line and high-tension switching installation, with the expectation of resuming operations on dam and power house as early in the spring as water conditions permit. It is expected that construction will be completed and the plant put in operation about Jan. 1, 1926.

The Lake Cushman project, located on the Skokomish River about 40 mi. northwest of Tacoma, involves a 275-ft. arch dam, a storage reservoir of 450,000 acre-ft., and a power house which will contain two 25,000-hp. reaction turbines to operate under heads ranging from 140 to 260 ft. A 6,200-ft. span across "The Narrows" is contemplated in the plans for the construction of the transmission lines, and a description of this feature of the project appeared in Journal of Electricity, May 15, 1924, p. 374.

Santa Clara County League Will Hold Dancing Party

The Electrical Development League of Santa Clara County will hold its second annual high jinks and dance at Ye House of Hoo Hoo, 12 mi. west of San Jose, Calif., on Friday evening, Dec. 5, 1924. An elaborate program has been prepared by the committee, and all members of the electrical industry will be welcome.

J. W. Squires, of the Pacific Gas and Electric Company, San Jose, is general chairman of the affair and is assisted by the following: J. M. Haydon, Pacific States Electric Company, San Francisco; Chester Hershey, Guilbert Bros., San Jose, and A. H. Noyes, Westinghouse Electric & Manufacturing Company, San Francisco.

California Wire & Cable Company to Erect New Plant.—The California Wire & Cable Company, Orange, Calif., owner of the California Wire Company and the California Cordage Company, has announced that it will erect a new factory at Pittsburg, Calif. The company has been appointed sole distributor of the copper wire products of the Columbia Steel Corporation, whose rolling and drawing mills at Pittsburg are the only ones on the Pacific Coast. To provide funds for the erection of the new plant, the company is offering for sale units of stock, comprising two shares of preferred stock and one share of common stock.

Local Electrical Leagues Council Organized at Meeting

Representatives of the local electrical leagues and of the Society for Electrical Development comprising the League Council elected in September at the third annual conference of local electrical leagues at Association Island, N. Y., held their first meeting at Cleveland, Ohio, on Nov. 17-18. This meeting was for the purpose of organizing the Council, so as to carry out the purposes of the so-called Whitehorne report, namely, that the Council represent the local electrical leagues of the United States and Canada and act in an advisory capacity to the Society for Electrical Development in its work of league service. Discussion in general reviewed the present needs of league service now being provided by the Society for Electrical Development at the request of the past league conferences, and established the necessary working arrangements with the electrical development organization to carry on the functions of league headquarters and league service under the service and guidance of the League Council.

The Council elected T. C. Russell, president of the Russell Electric Company, Chicago, and director of the Electric Club of that city, chairman; and as vice-chairman, Earl E. Whitehorne, commercial editor *Electrical World*, a director of the New York Electrical League, and chairman of the League Organization Plan Committee, which had originally been established to work out a plan for co-ordinating local league activities through some central organization.

The Council discussed in detail the problem of financing league service and development. After a full discussion and the appointment of a special committee to report back to the Council on the second day, this recommendation was passed by the Council:

The question of financing local electrical business development naturally divides itself into two considerations: First, the national work that must be done to promote league development, and second, the local business development programs carried out by leagues. The work of national promotion at the present time is being financed by individual subscriptions from manufacturers, central stations, jobbers and contractor-dealers through the Society for Electrical Development, and about one-third of the budget of the society is at the present time expended in the field work of league development and promotion in services. The local work is financed principally by funds raised locally and in some small part in some cities through subscriptions from national sources.

The League Council also requested the society to undertake:

1. To prepare a report of its activities in league promotion for the year 1924, and a list of its services now available for the information of the several leagues.
2. To investigate the possibilities for league organization in all cities of the United States and Canada of over 100,000 population, and to promote the development of leagues in them as rapidly as possible.
3. To prepare a manual on league organization subject to the approval of the executive committee of the League Council.
4. To appoint a member of its staff to serve as secretary of the Council and to provide the necessary headquarters equipment. Kenneth A. McIntyre, who has had wide experience as supervisor of league and field work in the Society for Electrical Development, has been designated for this appointment.

The League Council endorsed the Red Seal Plan for the promotion of adequate wiring and recommended its adoption by the League. It also recommended that the name "Electrical League of

(any city)" be adopted as a standard for new leagues, so as to lend itself more effectively to public acceptance and the possibility of tying in with co-operative national advertising.

Tie-In Between Puget Sound and Long-Bell Effectuated

Mutually benefiting both companies, a physical tie-in has been effected between the lines of the Puget Sound Power & Light Company, southern district, at Kelso, Wash., and the 18,000-kva. steam plant of the Long-Bell Lumber Company at Longview. The two towns occupy contiguous territory with a common city limits boundary on one side, so that the tie line is not long. Connection is made temporarily through a 1,500-kw. bank of 13,200- to 45,000-volt transformers situated on the mill site near the steam plant. The capacity of this bank is to be increased immediately to 3,000 kw., on the arrival of the proper transformers, and subsequently increased as conditions may warrant.

The tie-in arrangement between the two companies carries with it an exchange of power agreement. The town of Kelso is materially benefited since, through the tie-in, it now has a substantial power source on either side. On the other hand, the town of Longview will receive power from the system of the Puget Sound company in case it is necessary to shut down the Long-Bell steam plant for any reason.

Window Lighting Campaign Conducted in Pueblo, Colo.—The Southern Colorado Power Company and contractors of Pueblo, Colo., conducted a campaign in that city recently to establish new standards in commercial illumination. Two evening meetings were held at which the demonstration equipment of the Denver Electrical Cooperative Campaign was displayed by S. W. Bishop, executive manager of the Denver organization. An illustrated talk on window lighting was presented also.

Books and Bulletins

ELECTRIC RAILWAY HANDBOOK

By A. S. RICHEY, Consulting Engineer, Professor of Electric Railway Engineering, Worcester Polytechnic Institute. 832 pages. 600 illustrations. Pocket size. \$4. McGraw-Hill Book Company, Inc., New York, N. Y.

Richey's "Electric Railway Handbook" is a small encyclopedia. It combines in convenient form the work of the civil, mechanical and electrical engineer in a fashion well adapted to be of assistance to an operating man, especially of properties not of sufficient magnitude to permit the establishment of extensive departmental organizations.

To the student who is preparing himself for an engineering career, it will be a valuable book of reference.

The busy engineer who is in need of information out of his special line will find it useful to give him a lead toward the sources of more detailed information.

Its sections cover Roadbed and Track, from location to finished track and its maintenance; Car Houses and Shops, design and protection; Train Movement, schedules, resistances, power and energy requirements; Motors; Control Apparatus; Current Collection; Trucks; Braking, computations, adjustment, maintenance and mechanical details; Cars, design of various types, heating, ventilation and lighting; Power Transmission and Distribution, trolley and feeder construction and computations, electrolysis, negative return systems; Signals and Communication.

It is not an exhaustive treatise on any subject; hence it is not particularly useful to the expert who has need for information in his own field. At the same time, one would have to be really ingenious to miss finding, in its pages, good information upon any practical subject in electric railway practice outside of the power house and substations. These subjects are not mentioned.

A. H. Babcock.

WHO'S WHO IN AMERICA

Vol. 13, 1924-25. \$7.75. A. N. Marquis & Company, Chicago.

The issuance of the volume under review marks the twenty-fifth anniversary of the appearance of this useful book of reference. Growth has been rapid, and 25,357 biographies are given in the present edition, 2,774 of which are new. The total represents one out of each 4,800 of the total population of the United States. It is worthy of note that the publishers are careful in conserving space by deleting more than brief reference to notables who have retired from active work, whose biographies will be found in former editions.

An interesting feature of the book is the compilation of statistics relating to the educational opportunities of the persons mentioned. Of those who furnished such data, 77.36 per cent attended a university, 7.13 per cent attended academies or other secondary schools, 1.64 per cent attended normal schools, 5.35 per cent attended high schools and 8.52 per cent attended common or public schools. Of the total, 25.9 per cent were born on farms, 24.5 per cent in villages or small towns, 24.8 per cent in small cities, 20.6 per cent in large cities and 4.1 per cent in the suburbs of large cities.

"Who's Who in America" contains a geographical index and a guide to the pronunciation of proper names. It contains a mass of personal information that will be found of considerable value in the everyday life of the average citizen, as well as to those who need accurate information in regard to the careers of prominent contemporaries.

DEPARTMENTAL AND STANDARD COSTS

By WILLIAM S. KEMP, treasurer the Holtzer-Cabot Electric Company, Boston, Mass.

In the presentation of this work, Mr. Kemp has supplied a most urgent need and has outlined clearly a cost-accounting system that will be of benefit to all branches of the electrical industry. The greatest value of the work lies in the fact that all the principles set forth have proved up successfully under practical application in an extensive business organization.

F. V. M.

Meetings

Plans for Cooperative Campaign for 1925 Are Outlined

General discussion of the program of development to be adopted by the California Electrical Cooperative Campaign for the calendar year 1925 and the adoption of a \$50,000 budget for the year featured the meeting of the advisory board of that organization held at the Palace Hotel, San Francisco, on Nov. 18. R. E. Fisher, chairman of the board, presided at the meeting. In addition to members of the advisory board, a number of representatives of central stations and contractor-dealers from both the northern and southern sections of California were in attendance.

After a general discussion it was determined that among the major developments to be undertaken would be the promotion of the construction of eighteen or twenty \$7,000 to \$8,000 electric homes, to be built in cities and towns apportioned equally between the southern and northern sections of the state. The services of the Campaign in this regard will consist of promoting the general idea in each locality through the services of the Campaign field men and the furnishing of plans, specifications and other data to those communities interested.

The publication of a data book in a first edition of 10,000 copies was authorized. The text for the data book has been under consideration by a committee for some time and will carry clear, concise data dealing with all of the major electrical appliances and setting forth the utility and applicability for domestic use.

It was determined that, so far as a special Christmas sales effort was concerned, there should be no high-pressure drive on the part of the Campaign as such, but that the industry in general would receive the assistance of the Campaign in helping to bring about the most efficient use of material already available from manufacturers.

A general expression of approval was given to the Red Seal Plan campaign of the Society for Electrical Development. Arrangements will be made for the use of the Red Seal. In this connection, L. R. Chilcote suggested that the Campaign prepare a contractor's handbook similar to that of the Electric League of Cleveland. This book would be designed to assist the contractor to sell adequate wiring in the home. That the Campaign should foster the installation of adequate feeders in all homes was the contention of F. H. Woodward, who believes that in this way obstructions to the installation of electric ranges and other large current-consuming devices would be removed.

In connection with plans for the coming year, it was proposed to inaugurate an adequate window-lighting exhibit and to continue the customary work in connection with June Bride Week, as heretofore. Cooperation will be given to the work of the Electric Transportation Bureau. After carefully considering the advisability of undertaking the preparation of a motion picture that

would set forth the advantages of electricity in the home, it was moved to lay this proposition on the table for further consideration a year from now.

It was believed that, in order to follow up the publicity and element of good will created through the Better Home Lighting Contest, it was advisable to develop and undertake a comprehensive kitchen lighting campaign. Discussion brought out the fact that the lighting equipment in the average kitchen seldom was better than one 25-watt lamp. It was believed that a 150-watt unit could be sold at a cost of \$6.50, including commission to the salesman, and that installment plan purchases could be inaugurated providing for payments of \$1 down and 50 cents a month. This matter is to be brought to the attention of central stations so that in cooperation with the Campaign this movement may be inaugurated as quickly as possible.

The advisability of close cooperation between the Campaign and the various bureaus of the Commercial Section of the P.C.E.A. was pointed out and emphasized. Since the work of the two closely parallels, each could supplement the labors of the other and prevent duplication of effort.

After the adjournment of the open meeting, a closed meeting was held at which a budget for 1925 was adopted aggregating a minimum of \$50,000. A finance committee consisting of A. E. Wishon, chairman, D. E. Harris and C. T. Hutchinson was appointed to provide funds for continuing the work.

Utah Governor-Elect Addresses Salt Lake Engineers

George H. Dern, who was recently elected governor of Utah, was the principal speaker at the regular weekly luncheon of the All-Engineers' Club held at the Chamber of Commerce at Salt Lake City, Utah, on Nov. 17. Mr. Dern, who is a mining engineer, touched briefly on his proposed program in fulfilling the duties of his new office.

On the subject of engineers and engineering work, Mr. Dern pointed out the desirability of engineers taking a more active part in public life. "If engineering is applied common sense," he said, "then we need more engineering all down the line, including governmental affairs. The engineer is trained to think straight, and to be influenced by nothing except cold facts. Straight thinking and straight acting will increase governmental efficiency." He advised engineers not to stand aloof and find fault, but to render better service by getting in and helping.

Work on Hetch Hetchy Transmission Line Progresses Rapidly.—Sixty-seven per cent of the steel transmission towers for conveying current from the Mokasin Creek power house to the city of San Francisco had been erected on Nov. 25. Conductors are being strung on the lower end of the line, and crews stringing conductors are scheduled to start on the upper end about Dec. 1. Dependent somewhat upon weather conditions, the date now set for the completion of the line is March 1, 1925. Steel-core aluminum conductors are used on the upper end of the line, and hemp-core copper cables are being installed on the lower end. The steel towers being used are 98 ft. high, and the lowest crossarm is 62 ft. from the ground.

Discuss Adoption of a New Term for Convenience Outlet

Discussion concerning the adopting of a new term for the device known as a "convenience outlet" occupied an important position on the program of the meeting of the advisory publicity council of the Society for Electrical Development held on Nov. 11. The subcommittee, appointed at a previous meeting to consider the question, reported that, while considerable study had been made, no satisfactory solution was ready to be advanced at that time.

An expression of opinion was asked from every member of the council present, and all admitted that the term "convenience outlet" was not in any sense satisfactory and felt that if the industry is to get a term which will be acceptable to the public, it must permit the public to have something to say in the final selection of the popular nomenclature of this device. All were of the opinion also that, while the term "convenience outlet" may not be entirely satisfactory, the industry having used it in millions of pieces of literature and advertised it in hundreds of thousands of dollars' worth of newspaper space, it is inadvisable to change to any other definitive term unless it is acceptable to the whole industry and to the public.

A campaign that had been conducted in Philadelphia, designed to find out what the public called the device and to see if any term offered suggested a solution was described, and it was suggested that a poll be made of visitors to electric homes and other exhibitions conducted by the industry, with a view to learning the preference of the general public.

It was decided to continue the special subcommittee further to consider this subject and report at the next meeting. In the meantime, the industry is to be asked through the electrical trade papers and other mediums not to consider making a change until a term has been selected which meets the approval of the whole industry and behind which the industry can conscientiously put its weight. The council will welcome any suggestions that might be offered. Send them either to the Journal of Electricity or to the Society for Electrical Development, 522 Fifth Ave., New York.

Among other subjects discussed by the council was the report of a subcommittee appointed to investigate the method of budgeting advertising by central station companies and the changes in the by-laws of the society, particularly with reference to that section which deals with the fact that companies can subscribe in any amount to the society's work. Individual memberships are authorized by a recent change.

COMING PACIFIC COAST ELECTRICAL ASSOCIATION MEETINGS

Technical Section—

San Francisco, Calif.
Jan. 7-9, 1925

Change Made in Capitalization of Utah Company.—Amended articles of incorporation, increasing the capital stock of the Utah Power & Light Company, Salt Lake City, Utah, from \$60,000,000 to \$65,000,000 have been filed in the office of the secretary of state of Utah.

Manufacturer, Dealer and Jobber Activities

The Coffield Washer Company, Dayton, Ohio, has published a folder, "The Five Fundamentals," designed to outline briefly the five fundamentals on which the company's retailing methods are based. The details of these basic principles are completely covered in a book, "Retailing the Coffield," which may be obtained upon application to the company or the nearest factory representative.

The Lionel Corporation, New York, N. Y., manufacturer of miniature electric trains, has developed a new automatic train control, which takes the form of a signal tower with red and green lights. As the train approaches, the light changes from green to red and the train stops. After a few seconds, the light again shines green and the train resumes its journey. A controller has been placed on the device so that, at the will of the operator, the train may pass the block, in which event the light shows green at all times.

Du Pont Household Appliance Company, 854 South Hill St., Los Angeles, Calif., recently changed hands, and is now being managed by Dodd Mauldin, former secretary and sales manager of the Cleveland Armature Works, Cleveland, Ohio. The business will be conducted under the same firm name and will feature a complete line of washers, vacuum cleaners and general household appliances.

The General Electric Company, Schenectady, N. Y., recently issued Bulletin No. 47731, "Automatic Station Control Equipments." It describes briefly the uses and advantages of this type of equipment, and is well illustrated. The greater part is given over to a list of installations up to Jan. 1, 1924, giving the name of the company, station, type of apparatus, kilowatt capacity and incoming and outgoing voltage.

The Reynolds Electric Company, Chicago, Ill., has announced a flasher which incorporates in its construction the company's latest method of transmission through the use of spur gears. The motor is equipped with an idler pulley to take up the slack in the belt.

Frank P. Fahy, New York, N. Y., has issued a pamphlet, "Fahy Simplex Permeameter," descriptive of the Fahy permeameter, an instrument designed for the determination of the inherent magnetic properties of materials. The first half of the booklet is devoted to magnetic testing and magnetic characteristics, and the rest to a description of the instrument.

The O. C. White Company, Worcester, Mass., has issued a catalogue insert describing its sewing machine lighting fixture, style 1SM. It is adjustable and detachable and made to clamp upon any standard sewing machine. Primarily intended for domestic machines, it may be adapted to larger power machines by varying the size of the strap clamp.

F. Hackleman & Company, electrical contractors, Seattle, Wash., secured the contract for wiring the proposed hotel to be built on Second Avenue and Battery Street by A. S. Hainsworth.

Courteous Service Club Contests Are Announced

\$\$\$\$\$ For Your \$MILE\$ \$\$\$\$\$

Two contests are being conducted by the Courteous Service Club Committee of the Pacific Coast Electrical Association. Fifty dollars in cash is to be distributed among the prize winners in these two contests which are being conducted by the Courteous Service Club. To enable more individuals to enter the contest, the closing date has been changed from Dec. 1 to Dec. 18, 1924.

Here are the two contests:

Contest I

Twenty-five dollars in prizes to be awarded for the best slogan, of not over ten words, for use by the Courteous Service Club during 1925. The first prize winner will receive ten dollars; the second, five dollars; and the third to sixth inclusive will each be awarded two dollars and fifty cents.

Contest II

For the best true story of not over two hundred (200) words in length illustrating the application of courtesy by an employee, the Courteous Service Club Committee of the Pacific Coast Electrical Association will award a first prize of ten dollars. A second prize of five dollars will be given for the second best story and the persons who submit the stories which shall be adjudged to rank from third to sixth best will each receive two dollars and fifty cents.

Anyone, except the members of the Courteous Service Club Committee and their immediate families, shall be eligible for participation in the contest.

The names of the winners, together with the winning contributions, will be presented in the Jan. 1, 1925, issue of the Journal of Electricity. Enter the contests now by sending your entry to Courteous Service Club, c/o Journal of Electricity, 883 Mission Street, San Francisco, Calif.

Contest Rules

The rules for the two contests are the same and are as follows:

1. The contest is open to anyone except members of the Courteous Service Club Committee of the Pacific Coast Electrical Association and their immediate families.

2. In Contest I the slogans submitted must be of ten words or less. In Contest II stories must be true and of two hundred words or less in length.

3. The judges will be the members of the Courteous Service Club Committee of the Pacific Coast Electrical Association and are as follows:

R. A. Balzari, Westinghouse Electric & Manufacturing Company; Victor Hartley, California Electrical Cooperative Campaign; M. S. Barnes, General Electric Company; G. C. Tenney, Journal of Electricity; H. L. Bronley, The California Oregon Power Company; O. S. Clifford, Truckee River Power Company; S. W. Green, San Joaquin Light & Power Corporation; E. G. McCann, Pacific Gas and Electric Company; Lloyd H. Hardy, Great Western Power Company; R. E. Smith, California Electrical Cooperative Campaign; Wm. Cyr, San Diego Consolidated Gas & Electric Company; E. B. Cummings, Southern California Edison Company; R. E. Bacon, Southern California Edison Company; W. A. Knost, Electric Club, Los Angeles; D. L. Scott, Los Angeles Gas & Electric Corporation.

4. Prizes to be awarded separately in each contest are as follows: First prize, ten dollars (\$10); second prize, five dollars (\$5); third to sixth prizes, inclusive, two dollars and fifty cents (\$2.50) each.

5. In case of tie the full amount of the prize will be awarded to all of the tying contestants.

6. Entries are to be sent to Courteous Service Club c/o Journal of Electricity, 883 Mission Street, San Francisco, Calif.

7. Entries must be received before midnight of Dec. 18, 1924.

8. Prizes will be announced in the Jan. 1, 1925, issue of the Journal of Electricity and the winning contributions will be published in that issue.

9. No entries will be returned to contestants and the right of the Courteous Service Club to use slogans and stories shall be conceded upon filing of entry.



Personals

G. R. Henninger, for the past year operating assistant to the protection engineer of the Southern California Edison Company, Los Angeles, Calif., has



G. R. HENNINGER

been appointed associate editor of the Journal of Electricity and will take up his duties Dec. 1. Mr. Henninger has had about seven and a half years of public utility experience. Of this time, five years have been spent as an operator of transmission and distribution substations and a downtown d.c. central station, and a year and a half devoted to the study of portions of the systems of several large Eastern and Middle Western utilities and two Pacific Coast utilities other than the Edison company. He has specialized in work relative to the design, application and operation of protective equipment, and in his capacity as operating assistant to the Edison company's protection engineer was responsible for the maintenance and operation of the entire protective relay system of that company's stations. Mr. Henninger was graduated from the University of Southern California with the degree of bachelor of science in electrical engineering.

A. C. McMicken, sales manager of the Portland Electric Power Company, Portland, Ore., attended the meeting of the Commercial National Section, held at San Rafael, Calif., Nov. 19-21. Mr. McMicken, as chairman of the electric cooking and heating committee, directed one of the meetings notable for the interested discussion.

H. H. Courtright, president and manager of the Valley Electrical Supply Company, Fresno, Calif., was a recent visitor to San Francisco.

Col. H. G. Winsor, Tacoma, Wash., has been appointed by the Puget Sound Power & Light Company, Seattle, Wash., personnel officer, a newly created position, effective Dec. 1.

R. J. Moore, president and manager, Yamhill Electric Company, Newberg, Ore., recently journeyed from the North to attend the conclave meeting of the Commercial National Section of the N.E.L.A. at San Rafael, Calif.

C. E. Greenwood, Edison Electric Illuminating Company, Boston, Mass., is chairman of a subcommittee of the electric cooking and heating committee of the Commercial National Section that is working on the revision of wiring standards as they affect the installation of electric ranges and water heaters.

Ray W. Turnbull, assistant Pacific Coast sales manager of Edison Electric Appliance Company, Portland, Ore., visited Spokane, Wash., Nov. 24-29, inclusive, on general sales matters.

P. S. George, of the Coast Valleys Gas & Electric Company, Salinas, Calif., attended the meeting of the Commercial National Section, held at San Rafael, Calif., Nov. 19-21.

L. M. Klauber, general superintendent, San Diego Consolidated Gas & Electric Company, San Diego, Calif., spent several days in San Francisco during the latter part of November.

Lewis A. Lewis, sales manager, Washington Water Power Company, Spokane, Wash., during the session of the electric cooking and heating committee at the Commercial National Section's recent conclave meeting, reported on the Northwest electric range survey. The survey is being made under the direction of H. L. Melvin, electrical engineer, Washington Water Power Company, Spokane, Wash.; F. J. Rankin, chief engineer, Idaho Power Company, Boise, Idaho, and M. T. Crawford, superintendent of distribution, Puget Sound Power & Light Company, Seattle, Wash.

Horace Cline, treasurer of the Los Angeles Gas & Electric Corporation, Los Angeles, Calif., has been made a member of the directorate of that company. Mr. Cline's connection with the concern began in 1891 as a bookkeeper for the Los Angeles Lighting Company, which was later reorganized as the Los Angeles Gas & Electric Corporation. During his service with the utility he has held various positions, among them that of collector, paymaster and assistant treasurer. He has served as treasurer for the last eight years.

T. F. Kennedy, H. L. Doherty Company, New York, was among the Easterners in attendance at the N.E.L.A. Commercial National Section's conclave meeting held recently at San Rafael, Calif.

W. N. Sproule, president, Southern Pacific Company, San Francisco, Calif., made an address at the recent annual convention of the National Association of Railway and Utilities Commissioners at Phoenix, Ariz.

C. D. Se Cheverell, assistant to the president, Central Power Company, Grand Island, Neb., attended the recent conclave meeting of the Commercial National Section of the N.E.L.A. at San Rafael, Calif.

C. D. Jackson, counsel for the National Electric Light Association, attended the annual convention of the National Association of Railway and Utilities Commissioners at Phoenix, Ariz., Nov. 11-14, and was one of the speakers.

Paul Overton, general counsel for the Los Angeles Gas & Electric Corporation, Los Angeles, Calif., has been elected a member of the board of directors of that corporation. Mr. Overton entered the employ of the company in 1904 as stenographer. Since that time he has served in the capacities of clerk, special agent and assistant general counsel.

Clyde L. Chamblin, president of the California Electrical Construction Company, San Francisco, Calif., has been nominated as a director, two-year term, from the Pacific Coast of the Association of Electragists, International.

James H. Boyer, Grant D. Miller and Alfred Latham were recently re-elected to the directorship of the East Bay Municipal Utility District, Oakland, Calif. They will serve for four years. David P. Barrows and George C. Pardee, the newly elected members, will serve for two years.

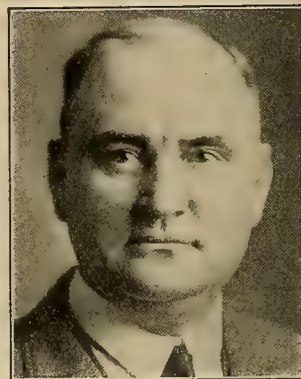
Percy P. Pine, San Diego Consolidated Gas & Electric Company, San Diego, Calif., represented that company at the conclave meeting of the Commercial National Section of the National Electric Light Association held at San Rafael, Calif., the latter part of November.

P. M. Parry, commercial manager, Utah Power & Light Company, Salt Lake City, Utah, gave a detailed description of the organization and functioning of a lighting service bureau at the recent conclave meeting of the Commercial National Section of the N.E.L.A. at San Rafael, Calif.

George R. Randall, Salt Lake City, Utah, has been nominated to be a director, for one year from the Rocky Mountain section, of the Association of Electragists, International.

Judge C. E. McLaughlin was recently elected president of the board of directors of the Sacramento Utility District, Sacramento, Calif. Robert L. Jones was re-elected vice-chairman. Albert Givan, formerly city engineer of Sacramento, was renamed general manager and chief engineer of the district.

G. T. Lundlee of the G. T. Lundlee Company, Sacramento, Calif., recently was elected president of the Sacramento Valley Electrical Society of that city. Mr. Lundlee has been engaged in the electrical business for ten years, his first venture having been made in Tonopah, Nev., in 1914, where he specialized in automotive appliances. He sold this business in 1919 and went to Sacra-



G. T. LUNDLEE

mento, where he opened a store dealing in electrical automotive devices. The company of which Mr. Lundlee is the head represents fourteen manufacturers of electrical goods and makes a specialty of magnetos. Mr. Lundlee has always been an active worker in the Sacramento Valley Electrical Society, and is a prominent member of the Rotary Club and other civic organizations.

W. R. Putnam, vice-president and general manager of the Idaho Power Company, Boise, Idaho, and chairman of the Commercial National Section of the National Electric Light Association, presided at the conclave meeting of that body, held at San Rafael, Calif., Nov. 19-21. Mr. Putnam also took part in the various committee discussions and contributed largely of his rich experience in utility matters.

J. W. Squires, of the Pacific Gas and Electric Company, San Jose, Calif., is general chairman of the committee of the Electrical Development League of Santa Clara County for the arrangement of the details of the annual dance and high jinks to be held Dec. 5.

Frank A. Leach, Jr., vice-president and general manager, Pacific Gas and Electric Company, San Francisco, Calif., was one of the speakers at the general conference of the Commercial National Section's conclave meeting.

E. C. Headrick, Denver, Colo., has been nominated to be a director, from the Rocky Mountain district for one year, of the Association of Electragists, International.

C. C. Munroe, Detroit Edison Company, Detroit, Mich., in his capacity of chairman of the lighting committee of the N.E.L.A. Commercial Section, was present at the recent conclave meeting held by the section at San Rafael, Calif., Nov. 19-21.

J. H. Jamison, merchandise manager of the Westinghouse Electric & Manufacturing Company, Los Angeles, Calif., attended the meeting of the Commercial National Section held at San Rafael, Calif., on Nov. 19-21. Mr. Jamison contributed to the discussions of the appliance committee.

W. N. Clark was recently appointed general manager of the Southern Colorado Power Company, Boulder, Colo. Mr. Clark has been superintendent of the Mountain Division of the company since 1911 and in his new position succeeds W. F. Raber, who has been made general manager of the San

W. H. Talbott, president of the Employees' Association of the San Diego Consolidated Gas & Electric Company, San Diego, Calif., was recently nominated without opposition as a candidate for a second term. Roger Ruffin, incumbent vice-president, was also re-nominated without opposition. Both are expected to be elected by acclaim at the next meeting of the association to be held in December.

J. F. Orr, of the Idaho Power Company, Boise, Idaho, attended the meeting of the Commercial National Section held at San Rafael, Nov. 19-21, and participated in the various committee discussions.

Prof. B. D. Moses, of the University of California, has been assigned to an investigation for the purpose of furthering the agricultural application of electricity and determining to what extent it may be so applied economically. This will constitute the contribution of the university to the work of the N.E.L.A. Commercial National Section's Committee on the Relation of Electricity to Agriculture.

H. C. Rice, of the Southern California Edison Company, attended the meeting of the appliance committee of the Commercial National Section, held at San Rafael, Calif., Nov. 19-21.

A. Jackson Marshall, secretary of the National Electric Light Association, New York City, recently visited San Francisco, Calif., to attend to details in connection with the annual convention of the association to be held in June, 1925. Mr. Marshall also attended the meeting of the Commercial National Section, held at San Rafael, Nov. 19-21, and offered many valuable suggestions at the various committee meetings.

M. H. Aylesworth, executive manager of the N.E.L.A., was one of the principal speakers at the annual convention of the National Association of Railway and Utilities Commissioners held at Phoenix, Ariz., Nov. 11-14.

A. H. Babcock, electrical engineer, Southern Pacific Company, San Francisco, Calif., spoke on "The Present Situation in Mexico" at a recent meeting of the Commonwealth Club.

R. A. Balzari, manager industrial department, Westinghouse Electric & Manufacturing Company, San Francisco, Calif., described in detail the Courteous Service Club during the session of the Customer Relations Committee at the conclave meeting of the Commercial National Section.

Bert Rowley, Salt Lake City, Utah, district manager of the Edison Electric Appliance Company, Chicago, Ill., recently spent some time in Denver, Colo., on business for his company.

Fred R. Jenkins, of the Commonwealth Edison Company, Chicago, Ill., attended the Commercial National Section meeting held at San Rafael, Nov. 19-21. Mr. Jenkins presented an outline of the educational courses that have been prepared under his direction and solicited the support of central station executives.

Z. E. Merrill, of the Mountain States Power Company, Albany, Ore., attended the meeting of the Commercial National Section held at San Rafael, Calif., Nov. 19-21.

N. J. Etienne, engaged in the handling of radio equipment in Los Angeles, Calif., paid a visit to San Francisco during the latter part of November.

Charles H. Thrane has recently been appointed district sales manager, Los Angeles, Calif., district, Pacific States Electric Company, and as such will have charge of all sales in that territory, reporting directly to Frank J. Airey, district manager. Mr. Thrane has been connected with the Pacific States Electric Company as salesman for the past four years, prior to which time he was connected with Pierson, Roeding and Company of San Francisco and Los Angeles. Mr. Thrane is a native of Berke-



CHARLES H. THRANE

ley, Calif., having attended grammar and high schools in that city, and entered the electrical business at the age of seventeen. His elevation to the position of sales manager of the Pacific States Electric Company is a reward of accomplishment during the years he has been with that company.

Dr. E. A. White, chairman, National Committee on the Relation of Electricity to Agriculture, made an interesting report of the work of the committee at the recent conclave meeting of the Commercial National Section held in San Rafael, Calif.

Obituary

Louis Glass, president of the Philippine Telephone & Telegraph Company, and for twenty years connected with the Pacific Telephone & Telegraph Company and its subsidiaries, died in San Francisco, Calif., Nov. 12, at the age of 79. He began his career as a telegraph operator with the Western Union Company, where he remained until 1879, when he acquired an interest in the Oakland and San Diego telephone companies. From that time on he devoted himself to the development and expansion of the telephone industry. In 1905 he formed the Philippine Telephone & Telegraph Company, becoming its first president, and in 1912 withdrew from active service with the Pacific Telephone & Telegraph Company to give his entire time to the Philippine company. Mr. Glass was one of the originators and developers of the "express switchboard," and he also made the first installation of the harmonic party-line system for selective party-line service.



W. N. CLARK.

Diego Consolidated Gas & Electric Company, San Diego, Calif. Mr. Clark graduated from the University of Illinois and began his public utility service in 1889. He has been associated with the Byllesby interests for the past several years, and has occupied various positions in that organization, coming to his new position with a fund of valuable utility experience.

Trade Outlook

San Francisco

A steady improvement in conditions in the electrical industry is in evidence in San Francisco and the bay territory. Exceptionally good business is reported by the retail trade. Holiday buying is getting well under way; the initial sales volume is particularly encouraging, and there is every prospect that the final total will be entirely satisfactory. An indication of the present activity in electrical construction work is the fact that schedule material is moving fast and evenly. There is an increasing volume of certain plugs and snap and flush switches for incorporation in manufactured articles. Excellent sales of radio and radio equipment are reported, with an increasing demand for higher-priced sets. As a whole, the outlook for the future is extremely encouraging.

In other lines of business, improvement is reported. The volume of cash buying, on the whole, is good; collections are regarded as fair. Establishments that handle holiday goods report increasing activity, with encouraging outlook for a final satisfactory total.

Leading jewelry jobbers state that their sales are running ahead of those obtained for the same period last year, with buying quite active. Silverware, clocks and watches lead the sales. Salesmen report a disposition on the part of country stores to buy on a larger scale than formerly.

Denver

Electrical jobbers in this territory report an unusual demand which promises a record holiday business. The idea of an electrical Christmas is being stressed by the industry, and encouraging results have been obtained already in appliance and radio lines.

Data compiled from bank clearings, postal receipts, building permits, industrial reports and employment conditions showed a real cause for thanksgiving and revealed the unusual prosperity of Denver and its position as the financial and business center of the Mountain region.

Bank clearings averaged 5 per cent over the same period last year, while postal receipts increased 9 per cent in November. Unusually fine weather has permitted a continuation of the record building program. Another indication is the amount of the cattle receipts at the Denver stockyards that broke all previous records on two succeeding days. All these factors, coupled with the outcome of the national election, have tended to produce a strong feeling of optimism in this section.

Los Angeles

The situation which has developed in this city and surrounding territory is representative of the conditions of the electrical industry, retail sales showing a decided improvement, and it may be well stated that business in general at this time is good. Appliances, both heating and major devices, reflect this business activity, and increase is reported also by the radio departments of

the various electrical stores. Music stores, department stores and others handling radio apparatus report excellent business conditions prevailing, with sales increasing rapidly and with a scarcity of certain makes of radio equipment.

Jobbers and wholesalers in this territory report increased business, with present conditions highly satisfactory. Relief and satisfaction are being expressed that the severe slump which was experienced during the summer months seems to be at an end.

In the last few weeks manufacturing business has picked up, and manufacturers and manufacturers' representatives in this territory report orders rapidly coming in.

The building industry is not quite up to the same period last year, but it has increased considerably over the low peak of the summer months. Labor is finding employment, and that situation is not serious at the present time.

Seattle

Christmas buying is active in this district, Seattle electrical jobbers report, with a particularly brisk movement of percolators, toaster stoves, waffle irons and tree outfits. Dealers anticipate an especially satisfactory final sales volume. Reports from outlying towns in rural districts are encouraging, with washing machines, vacuum cleaners and other household appliances in increasing favor. Replacements in all lines are becoming harder to obtain as the season advances. Prices are tending upward.

In other lines of industry there is a general improvement, and confidence that the present volume will continue is expressed by business men.

Unusual activity is being manifested in jewelry circles. The withholding of orders by retailers until the beginning of the pre-holiday season has resulted in flooding the manufacturers with orders. A high percentage of this work consists of special orders by customers through retailers. Pendants and charms, silver plate and quality watches are selling in good volume. Wholesalers report collections have been slow for several months, but retailers have few complaints to make in this regard. A good volume of business is being done by credit houses, whose collections are fair. Department stores and other concerns handling holiday goods report the Christmas trade has started vigorously.

Salt Lake City

The termination of election uncertainties has resulted in business men of this section looking forward to an improved outlook for business expansion. Merchants generally report a fair amount of activity in business, with a favorable outlook for Christmas trade. Collections are reported as being somewhat slow, due principally to the season of the year.

Electrical interests are planning increased activity in educational work along the lines of better home lighting, as a follow-up of the Home Lighting

Contest. There is a small amount of early Christmas shopping now under way, and from all indications the volume of this business will be greater than that of last season, and electrical gifts more popular than ever.

Coal production from Utah coal mines is showing an appreciable increase, due to the colder weather demand. The benefit of moderately heavy snowfall in the agricultural sections and over the immediately adjacent winter ranges has been an important favorable factor in the agricultural situation.

The wool industry is on a sound basis, and wool buyers report the contracting of approximately 8,000,000 lb. of the 1925 clip in Wyoming, Idaho and Utah, at prices ranging from 40 to 43½ cents per lb.

Spokane

Retail trade has shown strong improvement since election, and a splendid holiday business is expected in all lines. The local electrical contractor-dealers are taking advantage of the home lighting contest to stimulate sales in lighting fixtures. Local building operations are confined principally to dwellings. In one neighborhood a group of fourteen small dwellings is being built, and each house will be wired for electric range and water heater.

Mining conditions in the Inland Empire are excellent, with practically all silver-lead properties operating at capacity. One of the larger companies has just announced the distribution of a substantial dividend for December.

Heavy snowfall in the woods during the last two weeks has led to the suspension of many logging operations. Local lumber plants report splendid prospects for the coming year, and orders have already begun to increase since election. One of the local operators has announced that his planing mill will be doubled in capacity and that a sawmill, shut down for a year, will resume operations within a month. An oversupply of labor in Spokane is noted, due largely to the decrease in logging operations. This is a seasonal condition.

Portland

A decidedly optimistic feeling exists in business circles following the elections. Already the larger companies are placing heavy orders with manufacturers, anticipating possible price advances.

The lumber market has reacted favorably, and numerous orders have been placed, one of the best features being the revival in the buying of car materials. Some increases in prices are reported.

Power companies, which before the election were carrying loads of 8 to 10 per cent greater than a year ago, now find it necessary to supply 12 to 15 per cent over last year. The electrical trade in most lines is good, and everything seems to point to a large holiday trade. The Portland Electric Power Company will add nearly 1,800 ranges to its load this year.

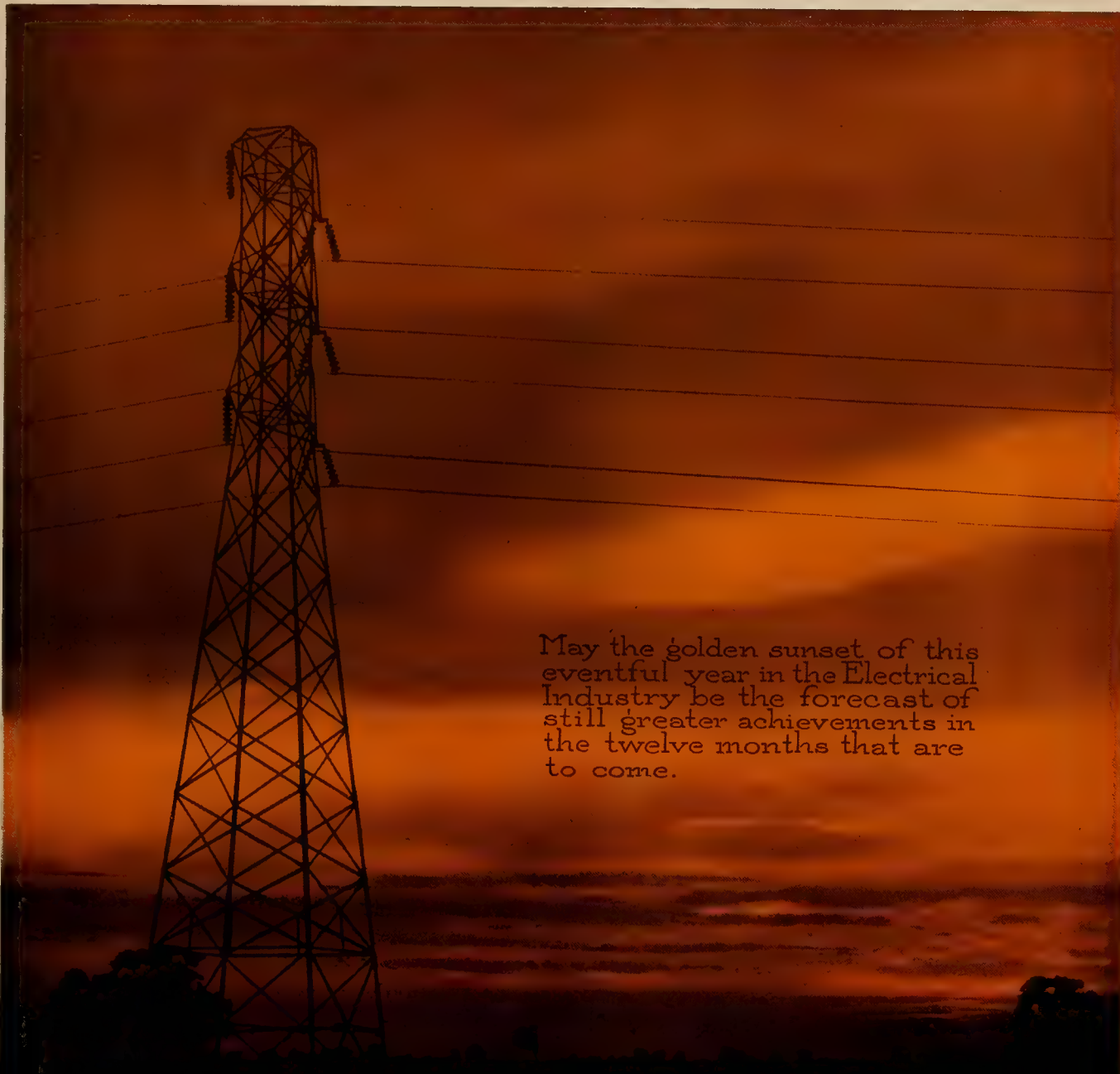
Winter wheat prospects in Oregon have improved since the rains, and if the temperatures continue favorable the crop should have a good start. The Oregon apple crop has been moving out well, particularly from the Hood River district.

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Journal of Electricity

Devoted to the Economic Production and Commercial Application of Electricity
IN THE ELEVEN WESTERN STATES



May the golden sunset of this
eventful year in the Electrical
Industry be the forecast of
still greater achievements in
the twelve months that are
to come.

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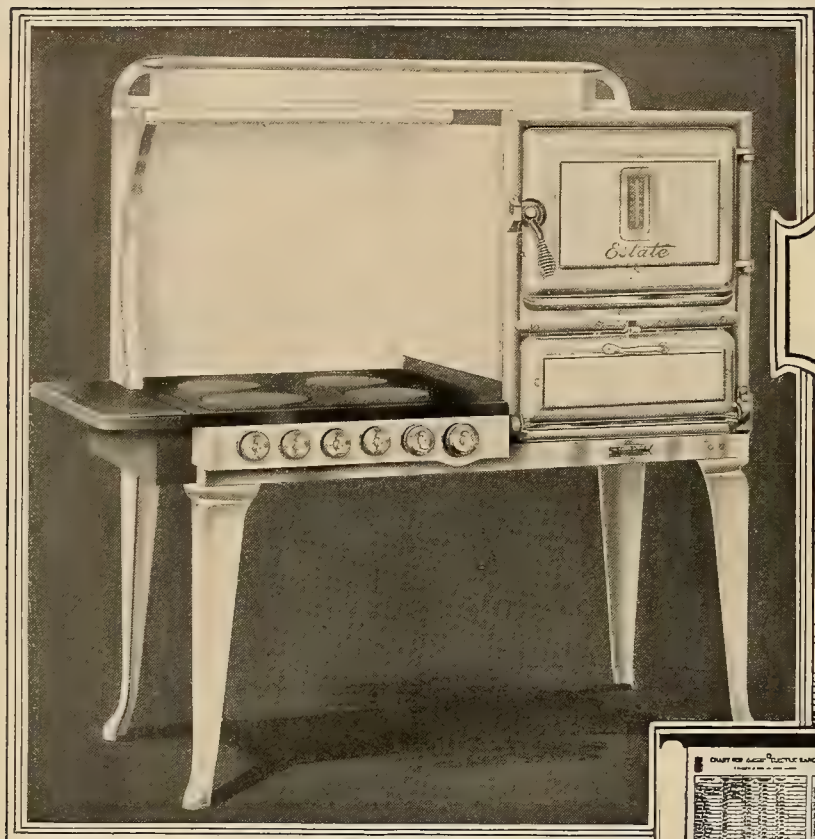
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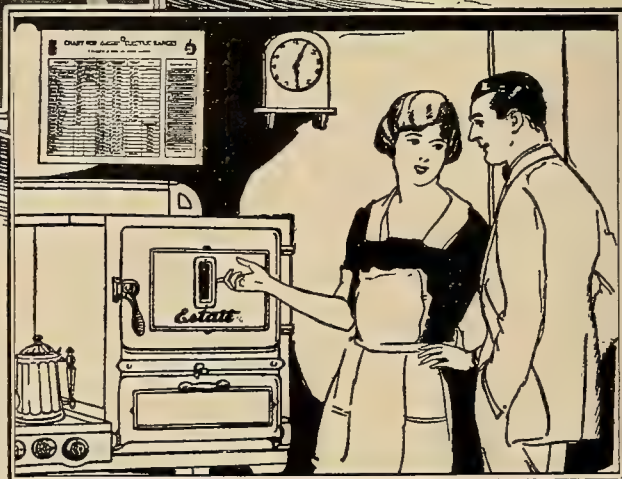
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IN THE ELEVEN WESTERN STATES

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Radio Retailing

THE McGraw-Hill Company, Inc., desires to announce a new publication, Radio Retailing, to make its first appearance on Jan. 1, 1925. Radio Retailing will be published in the same size as Electrical Retailing, and will be distributed as a supplement to that paper and Electrical Merchandising and thus have a circulation within the electrical trade of 45,000 copies monthly.

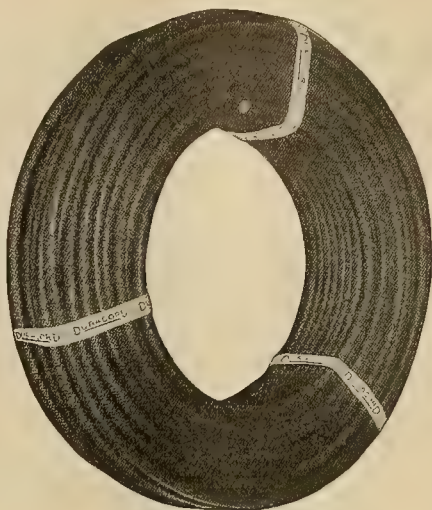
There has been a genuine and increasing need for a radio publication to serve the whole field of the radio trade, so much so that the McGraw-Hill Company, Inc., has been solicited time and again to employ its publishing organization in bringing out such a paper.

Since the McGraw-Hill electrical publications have been serving the radio industry since before 1920, the field is not new to the editors who have undertaken this responsibility. The editorial section, under the direction of O. H. Caldwell, and the business section, directed by H. A. Lewis, will reflect the experience gained by years of association with the merchandising problems of radio, and constitute a medium of expression that will render real service within the radio trade.

The editors of the Journal of Electricity take pleasure in introducing its new confrere to the electrical industry of the West.

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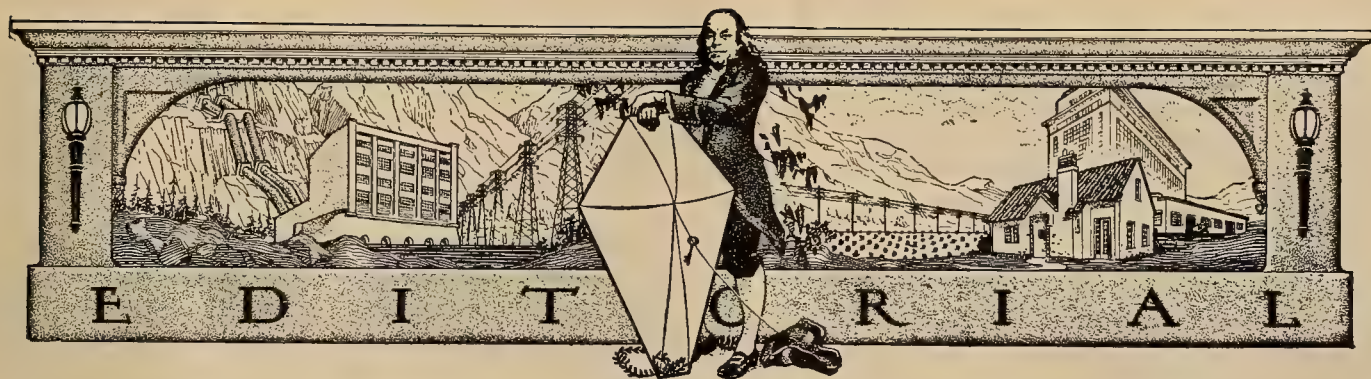
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Cost of Distribution of Electrical Merchandise

IN the opinion of General Guy E. Tripp, chairman of the board of the Westinghouse Electric & Manufacturing Company, the cost of distributing goods is too high. Speaking before the recent meeting of the Electrical Supply Jobbers' Association at Cleveland on the subject of "The Future of Electrical Merchandising," General Tripp said:

"The question of the cost of distribution is a problem of national importance, and it lies at the bottom of much of the current unrest and criticism of our present economic system.

"When the farmer discovers that milk for which he received 3 cents is being retailed at 16 cents, he feels cheated. When the consumer learns that the first cost of the milk for which he paid 16 cents was only 3 cents, he feels cheated. When the working man finds that the article for which he was paid 50 cents to make retails at \$6, he, too, feels cheated. The upshot is that all hands go hunting for the man who got the money.

"Save in a few exceptional cases, no guilty party has been discovered. Everyone engaged in conveying goods from the producer to the ultimate consumer has been able to show that he is engaged in an essential service, and no one has been found sequestering an undue share of the proceeds; but the public is still unconvinced, and this is why the high cost of distribution still remains a problem."

General Tripp was not speaking particularly of the electrical industry. As a matter of fact, he went on to point out that the selling cost of electrical merchandise was less than for many other lines including phonographs, furniture and perishable farm produce. He stated, however, that the electrical industry was under a moral obligation to reduce its cost to the lowest possible value.

We will go one step farther than General Tripp and say that the cost of electrical merchandise, particularly the labor-saving domestic appliances, to the consumer is too high. Although the volume of sales of appliances has been increasing from year to year, the total sales have been hardly sufficient to keep up with the growth in residential consumers. The industry has not only failed to hold its own, but has actually lost ground.

The high cost of appliances may be due in part to the cost of distribution. But, like the author of "Sweeney and the Saxophone" on another page of this issue, we are inclined to believe that it is due to the failure to create a demand sufficient to bring

about quantity production and its corollary, a lower unit cost. Like one of our contemporaries, we feel that when the electrical industry has produced a Henry Ford in the appliance field, the public will find no reason to criticise the high cost of distribution of electrical merchandise.

The "Red Seal" Standard for Adequately Wired Homes

FOR years there has been a persistent demand for a satisfactory method of bringing about a proper understanding by the public of the necessity for installing adequate wiring to provide for convenient electrical service. A standard of safety has been established by the National Electrical Code, but no authoritative standard for convenience has been offered as a guide to the public.

Insufficient wiring has been a big obstacle in the increased sale of portable lamps and fixtures, dining room, kitchen and laundry equipment, air and water heaters, ranges, and all the great variety of electrical labor savers and conveniences which have come on the market during recent years. The installation of wiring has not kept pace with the growth of electrical appliances and devices for the home. The supposed difficulty of installing extra wiring after the building is completed has continually retarded the impulse to buy and use the new appliances.

Few people, with the problem of building a new home or remodeling an old one, know how to specify all of the details of wiring to give them the kind of electrical service they will want later. The various cooperative organizations within the industry have done valuable educational work in overcoming this difficulty. Yet the public needs a simple and effective means for summing up these technical details in a symbol that everybody can understand.

The Society for Electrical Development is sponsoring for the United States the "Red Seal" plan, which was devised in Canada. Briefly, the plan establishes a standard for home wiring. A "Red Seal" home is an adequately wired home. Differences in local conditions will make it necessary to adjust the specifications to suit local requirements, but this difficulty can be easily overcome. It should be understood that the standard, while higher than the average, may not represent the ideal. It is neither the maximum nor the minimum, but is a practical standard which will permit the user to obtain adequate electrical service with an outlay for wiring which bears the proper relation to the total cost of the home.

The plan is basically sound. It is easily adaptable to local conditions. It fills a long-felt want. It should prove a splendid follow-up for the educational work in better wiring done by cooperative organizations during the past few years. For those reasons we recommend it to the serious consideration of the electrical industry here in the West.

Doctor Says Man

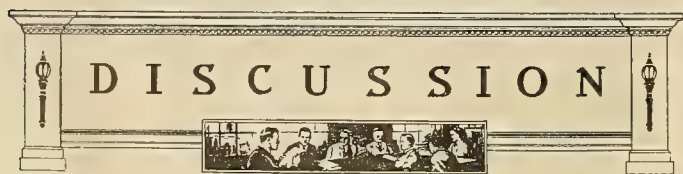
Run by "Dry" Cells

MAN has been likened to many things—at times. Darwin said that he was once a monkey. Some of us still are. Dr. Woods Hutchinson likened a man to an internal combustion engine, within whose mechanism the sugar taken into the system became, by chemical processes, alcohol. Thus is the internal engine fuelized, except when the man, in his ignorance, attempts to maintain his distillery in Scotland, rather than in his abdomen.

Now comes science again to the fore. Another doctor, this time a surgeon, Dr. George W. Crile of Cleveland, smashes the quite appealing distillery idea advanced by Dr. Hutchinson and offers a substitute—a quite unsatisfactory one—the idea that man is operated electro-chemically and that he, marvelous to relate, is made up of some 28,000,000,000,000 "electric" cells—dry batteries perhaps, since the passage of the Volstead act.

The human emotions—love, hate, fear and the others—according to the learned doctor, are merely stimuli, liberating currents of electrical energy to roam around within us in certain defined paths. Each of the twenty-eight odds and ends of trillions of cells—dry batteries—no, "wet" batteries, says the doctor, have positive and negative poles, without which we will agree no battery, wet or dry, is complete. Of these, the brain cells, it seems, are the most positive, while those of the liver are the most negative.

Here, then, is what has been the matter with our liver all this time. Avaunt, calomel and nasty-tasting nostrums. Let us short our recalcitrant livers, or ground them, or insulate them against the high-voltage indigestion germs found in rich food. Here is an opportunity for a real combination, by which these electrical emanations may be harnessed, synchronized and a new type of central station developed, and the ultimate consumer protected from the vagaries of rainfall and the price of oil.



The Walla Walla Mill Creek Plant That Was Built in 1892

To the Editor:

Sir: In the Nov. 1, 1924, issue of the Journal of Electricity I read an article sent in by Cooper Anderson of the Utah Power & Light Company, which was very interesting. Acting upon your re-

quest to the readers of the Journal for further data on early hydroelectric installations, I am sending you the history of the old Mill Creek plant of the Walla Walla Gas & Electric Company.

The plant was built in 1892 and was put in operation in 1893. The pipe line carrying water to the plant was constructed of redwood in barrel form, banded with steel rods, the ends being connected by a special cast iron shoe. This pipe had an inside diameter of 48 in. and was 5,200 ft. in length. As the pipe line passed through farm lands, it was laid in a trench and back-filled so that farming operations could be carried on over the pipe. At intervals along the pipe there were vacuum breaking valves to prevent the pipe's collapsing in case the water was let out when the headgate was closed. The intake was a concrete chamber which maintained the water level about 8 in. above the center of the pipe.

The water was diverted from the stream into the intake by a low piling and planked dam. The pipe was laid on a regular grade its full length and had a very slight lateral curvature, obtaining a head of 80 ft. in the 5,200 ft. of pipe.

The power house building was 40x40 ft., with brick walls. All piers and foundations for machinery were of brick laid in Portland cement, with the exception of the foundation for the generator, which was of concrete capped with 8 in. of redwood.

There were two 18-in. Pelton water wheels, each supplied by two 6-in. streams of water, both streams being applied on the lower part of the wheel. There also were installed two Doolittle governors, which were of the differential type, using a small Pelton wheel to supply the standard speed. These governors controlled the amount of water admitted to the wheel, through rods and levers connecting to butterfly valves in nozzles back of the tips.

Like many early attempts at governing water wheels, these governors were not practical for their purpose, so after much adjustment and experimentation and bursting of the pipe line they were abandoned. The butterfly valves were thrown out also, and in place of them the Pelton people sent ball joint tips with the hood cut off and ground to a suitable radius. The needle valves were not used much, if at all, at that time.

Mounted on each water wheel shaft was a 10-ft. wooden rimmed 7-grooved drive wheel grooved for 1-in. transmission rope. The counter shaft sheave was of 54-in. diameter and had 11 grooves. To take up the extra turns a 4-groove idler was used. Each drive required about 700 ft. of rope, the rope being endless. The cross was taken out overhead by a stationary pulley and a pivoted pulley mounted on a track with a cable and weight for take-up. Mounted on the counter shaft was an 8-in. band wheel with an 18-in. face which was used to drive the generators through a belt.

The original plan was to drive a separate generator with each wheel without any mechanical connection, but after starting operation it was found that one wheel could not supply power enough to carry the capacity of one generator, so the two coun-

ter shafts were connected with a simple clutch, and the second generator was never installed. The generator was a Thompson-Houston Company 100-kw., single-phase, a.c. machine, with revolving armature. It was rated 1,100 r.p.m., 1,100 volts, 120 cycle, single phase. This generator had a commutator as well as collector rings, the commutator being used to rectify a portion of the current for compensating purposes in field regulation.

The exciter, which was belt driven from the generator, was a Thompson-Houston Company 500-volt, compound wound, d.c. bipolar machine, with a capacity of about 30 amp. The high voltage and large capacity of this exciter were needed, as the original Mill Creek plant was to supply power to drive the old machinery in the city plant, which was at the time driven by steam.

In 1892, when the hydroelectric plant was installed, the city plant consisted of two 54x16-in. return flue boilers and a 100-hp. Erie-Ball tandem compound 300-r.p.m. engine. This engine drove the lighting machinery, which consisted of two Edison 3-wire system incandescent light generators and two small arc light machines, one a Wood and the other an Edison. These machines supplied the distributing system of the city.

In order to utilize the Mill Creek hydroelectric power a 100-kw., single phase a.c. synchronous motor was installed in the city plant five miles from the hydro station. This motor was designed to drive the counter shaft through a belt and friction clutch. The arrangement was such that both motor and engine could work together on this shaft or either could be operated independent of the other.

The reason for the high voltage and oversize of the Mill Creek exciter lay in the manner in which the power was used. Since it was impossible to start a single phase synchronous motor from a state of rest, or in fact below synchronism, there had to be some means of bringing this motor up to proper speed. To do this the switchboards at each end of the line were equipped with double-pole, double-throw main switches. The No. 0 copper transmission line was connected at each end to the middle point of this switch, and the generator at the Mill Creek plant and the synchronous motor in the city were connected to the top points of the switches. The 500-volt, d.c. exciter at Mill Creek and the 500-volt, d.c. motor in the city plant were connected to the bottom points of the switch.

By throwing the switch at the power plant to the lower position, 500 volts d.c. were sent on to the line. By throwing the city switch to the lower position, a 500-volt, d.c. motor was connected to the line. This motor through a belt brought the synchronous motor up to synchronous speed.

When the operator in the city had the proper speed he would open the switch and the operator at Mill Creek, by watching the indicator, would determine the proper time to throw his switch to the upper point, thus connecting the a.c. generator to the line. The closing of this switch lighted a pilot lamp in the city, indicating to the city plant operator the time to throw his switch to the upper point,

thus connecting the synchronous motor and the a.c. generator. This procedure of getting the synchronous motor up to speed and on the line was successful most of the time, but often involved many trials.

The switchboard at the hydro plant had a wooden frame with square posts at each end and in the center. Cross bars were set flush into the posts and were spaced several inches apart, according to the dimensions of the slate base with which all instruments were supplied. All of the switchboard equipment was furnished by the Thompson-Houston Company, and consisted of two lightning arresters, two voltmeters, two ammeters, an exciter rheostat, one single-throw double-pole switch, one double-throw double-pole switch. All of the switches were of the air break type. The telephone was mounted on one end of the switchboard.

This plant was used until 1900 and was very inefficient, obtaining an efficiency of about 50 per cent. The transmission line consisted of two No. 0 hard-drawn bare copper wires carried on glass insulators. The poles were of peeled fir, fifty-two poles being used per mile. The length of the transmission line was five miles.

A great deal of trouble was experienced with lightning burning out the generator coils, and many devices were employed to seek protection. Various kinds of patented arresters were used, and at one time barbed wire was placed on top of the poles for the full length of the line, this wire being grounded at frequent intervals. This grounded barbed wire proved no better than the other protection devices, and the generator coils continued to burn out. Finally the company adopted the policy of shutting down the plant when any sign of lightning was present.

In 1900 all of the old machinery was discarded and a 300-kw. direct connected 6,600-volt, 16-cycle, monocyclic generator was installed, together with a 500-hp. McCormick hydraulic turbine. The tail race was deepened, and by the installation of a draft tube the effective head was increased from 80 ft. to 93 ft. A steel standpipe was installed to prevent water hammer. This installation did away with all the old machinery in the city steam plant, that plant being used as a substation for distribution purposes only.

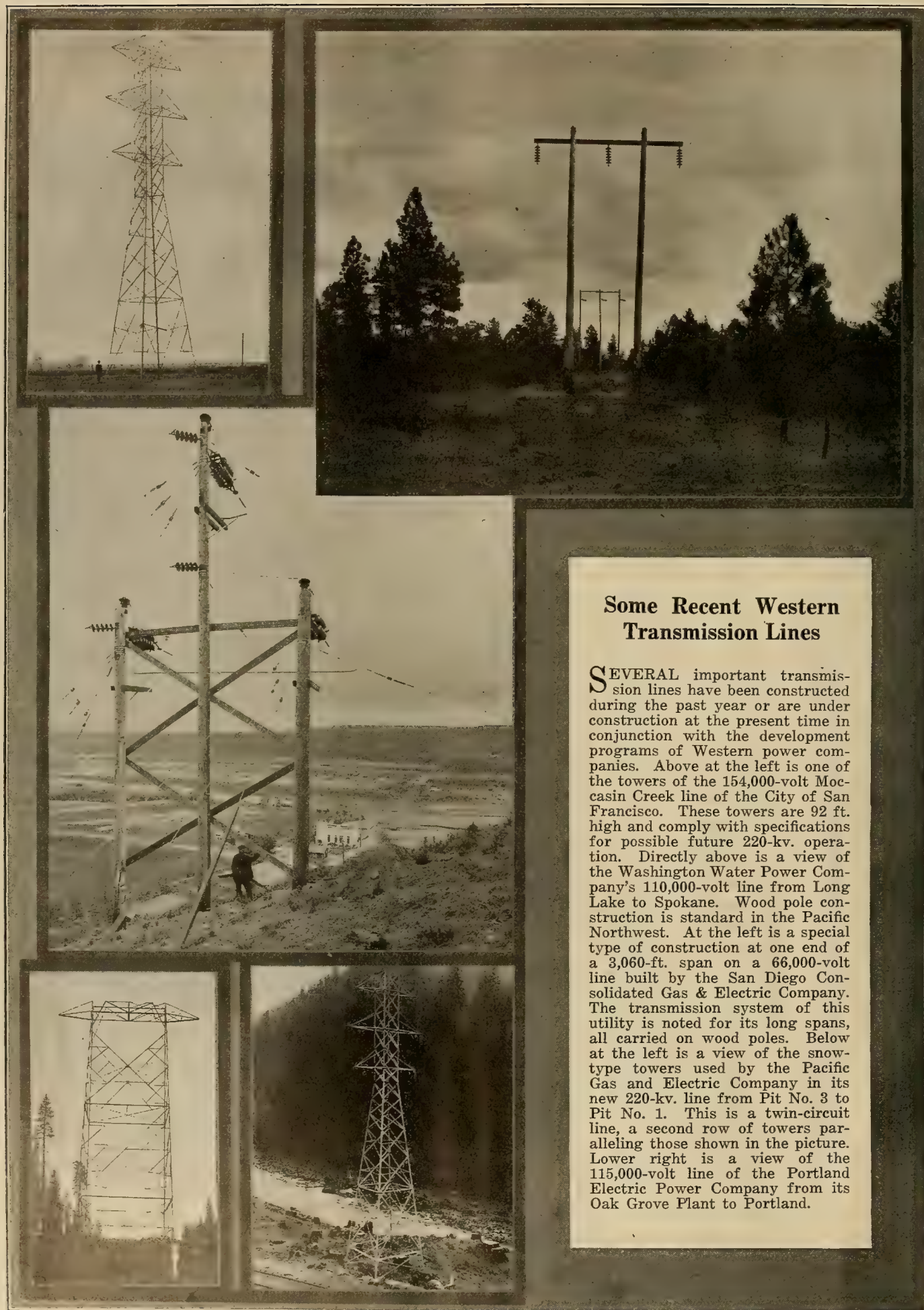
The corporate name of the company at that time was the Walla Walla Gas & Electric Company. A. J. Burrows was secretary and general manager. P. B. Young was superintendent of the power plant, and it was through his courtesy that I obtained the data on this installation. Mr. Young assisted in erecting both the city steam plant and the Mill Creek hydroelectric plant.

The Mill Creek hydroelectric plant was abandoned in 1905, when the Northwestern Gas & Electric Company put a new plant of 1,500-kw. capacity in operation on the South Fork of the Walla Walla River.

G. H. ROBINSON,

Operator Walla Walla River Plant, Pacific Power & Light Company.

Milton, Ore., Dec. 1, 1924.



Some Recent Western Transmission Lines

SEVERAL important transmission lines have been constructed during the past year or are under construction at the present time in conjunction with the development programs of Western power companies. Above at the left is one of the towers of the 154,000-volt Moccasin Creek line of the City of San Francisco. These towers are 92 ft. high and comply with specifications for possible future 220-kv. operation. Directly above is a view of the Washington Water Power Company's 110,000-volt line from Long Lake to Spokane. Wood pole construction is standard in the Pacific Northwest. At the left is a special type of construction at one end of a 3,060-ft. span on a 66,000-volt line built by the San Diego Consolidated Gas & Electric Company. The transmission system of this utility is noted for its long spans, all carried on wood poles. Below at the left is a view of the snow-type towers used by the Pacific Gas and Electric Company in its new 220-kv. line from Pit No. 3 to Pit No. 1. This is a twin-circuit line, a second row of towers paralleling those shown in the picture. Lower right is a view of the 115,000-volt line of the Portland Electric Power Company from its Oak Grove Plant to Portland.

Sweeney and the Saxophone

By Richard E. Smith

Advertising Manager, Southern California Edison Company, Los Angeles, Calif.

AN advertising man in New York who has the responsibility of getting more business for the magazine he serves, in soliciting orders from those who place advertising, has been using the catch line, "Tell it to Sweeney."

In his arguments he explains that while the millionaire is greatly to be desired as a customer few concerns can prosper by catering to him alone. It is the great prosperous middle class, the Sweeneys if you please, that constitutes the American market. Above Sweeney in the social scale is a limited number of people who can buy practically anything they want. They are fastidious, finicky and on the whole rather hard to sell. Below Sweeney is a big group of those who live on a hand-to-mouth plan. They can afford no luxuries and frequently not even all the necessities. In buying they are controlled by price more than anything else and have little opportunity to pick and choose. In between these two groups we find the Sweeneys, whose trade is decidedly worth while.

For some time I have been speculating about the electrical business, and I wish to explain that any remarks made in this paper are strictly on my own responsibility. They are my own thoughts and do not in any way bear the authority of the company which employs me.

From my observation it seems to me that the American people are not buying as much electrical merchandise as they should. When we consider that every electrical device has a distinct economic value; that it saves time, labor or money, and generally saves all three of these, then we wonder how people can pass our stores and spend their money for non-essentials. It occurs to me that possibly we have not made the proper analysis of our market. It may be that we have been working our statistics from the wrong end. By this I mean that we read bank clearings, building permits, postal reports, income tax statements and similar items which have a bulk value, but are decidedly lacking in detail. So I am going to ask your attention while we make a detailed analysis of Sweeney, a typical American citizen.

I am going to start with the assumption that Sweeney is an educated, businesslike, thrifty and industrious citizen. He lives in the better part of town, either rents or is buying his home, is providing

WHO are the prospective buyers of labor-saving domestic electric appliances? In this article the author has classed them under one head, namely Sweeney. He then analyzes Mr. Sweeney, his income, his family, his mental processes and his hobbies. He finds that Mr. Sweeney has a balance of \$15 after all items of the monthly budget are met. The saxophone in the story is the competitor of the appliances. It includes "balloon tires, phonographs" and the like.

well for his family, associates with good people, is giving a proper education to his children, owns a middle grade car, carries adequate insurance and is laying money aside for a rainy day. He is the kind of man you would like to have for a customer.

I am now going to assume that Sweeney has an income of \$250 a month. This would identify him as a man better than the average in most lines of endeavor. He may be a high

school teacher or the principal of a grammar school; a young professional man getting a good foothold; the chief accountant in some important establishment; the editor of a suburban newspaper of more than ordinary prestige. If he is in the public service, he may be chief of police or chief of the fire department or he may hold any city or county office just below the top positions. If he is a minister, his congregation is above the average. He is liberally represented in the building trades. If he is a farmer and regularly nets \$3,000 a year, he is to be congratulated.

You will see from this list that Sweeney is of considerably higher type than you thought at the outset. Such workers as mail carriers, motormen, conductors, most mechanics, clerks, bookkeepers and small merchants are entirely eliminated.

When you meet Mr. Sweeney, you size him up instantly as a good customer, as one who will readily purchase almost anything that you have to offer. If we should start an extensive range campaign tomorrow, Mrs. Sweeney would be the first lady to receive the attention of our salesman.

Many thrifty families now keep a budget in which they allocate as nearly as possible the amount of money they will allow each month for different purposes. Here is a budget which I have made for Mr. and Mrs. Sweeney. I think it is fairly accurate and that the amounts allowed are conservative. The first item of the monthly charges is rent, for which I allow \$50. If he is buying his home, this amount or a little more will take care of the monthly payments. For the regular household expenses, including groceries, vegetables, meat, milk, gas, electricity, water and telephone, I allow \$60. The next largest single item is the automobile. Sweeney owns a good car, probably a Studebaker, Buick, Essex, Maxwell or Dodge, but it is not paid for. He is making monthly payments between \$30 and \$50, so we will

allow \$40. Next come clothing, including suits, shows and things for the children, average \$20. Sweeney carries life insurance costing \$10 a month. He has some systematic method of saving, in which he places \$15 a month. For the doctor, dentist and barber I have allowed \$5. For car fare, lunches, tobacco, \$15. For amusements, including the annual vacation, \$10. For church, lodge, music lessons, papers and magazines, \$10. You will admit that each of these items is reasonable for a man in Sweeney's circumstances, and unless you have made a mental addition you are of the impression that there is still a tidy balance left out of his monthly pay check of \$250. As a matter of fact, these items total \$235, and the balance left for all other purposes is only \$15.

"Balance \$15"

A lecturer in mathematics, working out a complicated problem, from time to time sets to one side certain significant equations. That is what I want you to do at this point. Over on one side of your mental blackboard set out this item, "Balance, \$15."

By this time you can see that our analysis is going to lead to some interesting developments. In fact, I think this statement, "Balance, \$15," is the answer to a lot of things that have been puzzling our industry. As we ride around California and see so many evidences of prosperity, we jump to the conclusion that almost anything of merit will find a ready sale. Mr. Sweeney, it seems, is the man we encounter most frequently on these journeys. He is sticking rather close to his alley and is not spending any money without careful thought. He is living pretty well, to be sure, but he is not going to be reckless about anything.

Right here is where the saxophone comes into my story. I use this to typify the numerous things that Sweeney buys which he really does not need, and I declare that the saxophone and what it represents furnishes extremely keen competition to the electrical industry. To show what I mean, let us take a look at the Sweeneys on Sunday morning. Yesterday was pay day. Last night the family went to the movies and purchased two or three little luxuries for Sunday. This morning they slept late, had a good breakfast and now are going through the Sunday paper. The pay check has already received a few dents, but it is in pretty good shape and everybody is happy. Of course, the regular items of the budget must be met, but there is a general assumption that this month they will have a little more for extras than was the case last month.

Psychoanalyzing Sweeney

So here is Mrs. Sweeney going through that part of the paper which interests her most. It contains some society news, gossip of the movies, the book page, comment on artists and musicians and—the department store ads. Mr. Sweeney, without second thought, has picked up the section devoted to the great outdoors, sports and automobiles. They are reading promiscuously, so they think, but what are the impressions that are registered on their subconscious minds?

If we could take Mrs. Sweeney's subconscious mind into a dark room and develop it as we would a film, we would find something like this (and bear in mind the significant statement, "Balance, \$15"): Porch swings, wrought iron frame, finished in fancy denim with top and fringe, regular price \$40, Monday only \$32.50; bedding special, full width white woolen blankets, regular \$9, clearance sale price \$7.59; boys' school suits with two pairs of pants, sizes 9 to 14, special Monday only \$13.50; 1,000 yards Canton crepe, all colors, 40 inches wide, regular \$3 a yard, Monday only \$2.49; three-piece living room overstuffed suite, velour or tapestry, regular \$200, during this sale \$169.50; and so it goes through Mrs. Sweeney's list.

Doing the same thing with Mr. Sweeney's subconscious mind, we find impressions of balloon tires, a camping outfit, a new suit, a rifle, a set of golf clubs and several others things that he wants to get just as soon as they have a little more money. What are you thinking right now? Don't you see that your mind and Sweeney's are miles apart and that not only will they not come together, but they threaten to get still further apart? You are competing with the saxophone, and I think you will admit that so far the saxophone gets the decision.

Sweeney's Financial Leave of Absence

Return again to our \$15. Has it occurred to you that the saxophone costs about \$150? So does a phonograph, a good rug, a set of new tires, a vacation and several other articles I might mention. It is surprising how many good things there are in the world that can be obtained for about \$150. Among them are the electric range and the washing machine. But Sweeney has only \$15 a month for such purposes.

Now I come to the second fact that I want you to set to one side. When Mr. Sweeney obligates himself for a saxophone or anything else that costs \$150, he is definitely out of your market for ten months. In other words, if he buys a saxophone today, he is not a prospect for an electric range or a washing machine until next October. You can argue and demonstrate and solicit and cooperate in the most approved style. It won't do any good because Sweeney is not there. He is on a financial leave of absence. Also bear in mind that between now and next October several other opportunities will be knocking at his door awaiting a chance to get in.

Now we come to another condition which threatens to upset even the limited amount that we had hoped would percolate into our electrical cash drawers. The new trouble-maker is hobbies. Both Mr. and Mrs. Sweeney, being free born, intelligent, aggressive and pleasure-loving, have some sort of hobby. To this hobby they will allow a greater portion of the budget than it really deserves. You may think that Sweeney cannot afford to play golf, but a great many of him do that very thing. If he does play golf, he is going to justify his action with his own conscience and juggle with the budget in some way. If it is not golf, it is some other hobby—fishing, books, stamps, hiking, photography or some-

thing else that is constantly calling for money. Mrs. Sweeney is probably more modest in spending money for hobbies, but you may be sure she has some weakness!

I think this is enough of an analysis to show that the man whom we first carelessly identified as our best customer has to be herded in fairly large quantities before he spells any great era of prosperity for the electrical industry. At this point someone may ask, "If all this is true, how has the electrical industry managed to survive so far?" The answer is that Sweeney has purchased to a limited degree in spite of our salesmanship and not because of it. He buys wiring and fixtures for his house and is including payment for them in his appropriation of \$50 a month. Mrs. Sweeney by skimping and saving has managed to get a washing machine. She has an iron and toaster, but they were probably Christmas presents. You may think she needs a waffle iron, but that would cost about \$15, and you know now what she is going to think before she spends that amount of money in a lump.

All of us study charts and curves. Every sales manager wants to see this year's business better than last year's business. We talk about saturation, distribution, diversity and other abstract things. Why not talk about something concrete like Sweeney's \$15 a month? All of us depend upon the prosperity of the electrical business for our bread and butter. We are all looking for an increased volume of business. In California this increase has been provided regularly by an increase in population, and it is to be hoped that this condition will prevail for many years. We should take the regular staple business, such as wiring and fixtures, electric irons, flash lights and batteries, more or less for granted. We will get so much business of this sort, anyhow. What we are after is new business—something in addition to the regular trade—and this must come largely from Sweeney.

Sweeney and Radio

Someone may ask quite pertinently if all the money in the world is represented by Sweeney's \$15 a month, how do so many stores get by? It is rather remarkable that when Sweeney really wants something, he can manage to get it. The best recent evidence of this is furnished by radio. During the last twelve months, when, according to the papers, everything has been dead wrong—poor crops, low prices, unemployment, high cost of living, hoof and mouth disease, power shortage, presidential election—in fact, when things generally were about as gloomy as we can imagine, you would think that Sweeney has been having pretty hard sledding. As a matter of fact, he wanted radio, and somehow managed to scrape together \$350,000,000 which was invested these last twelve months in this fad. Of course, radio is more or less in our own family, and we are not disturbed on that account, but Sweeney has spent a lot of money for other things and we would like to get part of it.

How are we going to do this? It is in order for someone to remark that you do not fish for rainbow

trout with soft-shelled crabs, nor do you drive with a putter. When Sweeney begins to come in great numbers into our stores, selecting merchandise and signing orders for things, it will be because we have first studied Sweeney, found the bait that appeals to him and used that bait consistently.

About twelve years ago I was on the road. After considerable effort with one contractor-dealer who had just fitted up a very attractive electrical store I sold him one portable floor lamp. Several months later this store failed, the lamp was still in stock and my bill had not been paid.

Not long ago a department store in Los Angeles purchased two carloads of wrought iron bridge lamps with parchment shades. In the Sunday papers they offered these lamps as a special at \$5.95. Tuesday morning one of our men dropped in to get one and all of them had been sold.

In the first instance, Mrs. Sweeney never discovered that my beautiful lamp was in town. In the second case she saw the notice in the paper, she wanted a lamp, it looked like a bargain, and she bought to the extent of two carloads.

This applies equally to any other article of electrical merchandise. If we wish Mrs. Sweeney to add more electrical appliances to her household equipment, we must see to it that the advantages of those appliances are attractively presented to her. If we wish to impress upon Mr. Sweeney the desirability of purchasing electrical merchandise, our sales arguments and our demonstrations must be convincing.

Sweeney Must Be Studied

Returning to the subject of balloon tires, hundreds of men, including Mr. Sweeney, discarded their old-style tires and bought balloons, not because they needed them, but because some clever merchandiser convinced them that they should have this new equipment. Whoever heard of people standing in line to buy washing machines to replace their old ones which were still useful, although not the new style? We do not want to disturb Sweeney's mode of living nor have we any desire to have him deny himself the wholesome things that he now enjoys, but it is entirely right that we should insist on getting more electrical merchandise into his home.

To accomplish this we may have to abandon some of the traditions of our business. It is my suggestion that we make a serious study of Sweeney and then adjust our merchandising scheme to his buying habits. If prices are too high, then let us lower them. If the discount is too small, let it be increased. If advertising is aimed in the wrong direction, try changing its course. If we are trying to sell through the wrong store, let us seek the right one. I do not say that any of these things is actually true, but if our investigation reveals such conditions we cannot then ignore them.

In short, let us stop "kidding" ourselves. We are no longer an infant industry. Lots of good things which Sweeney wants and which he is buying have come on the market since our leading appliances made their bow. I cannot help thinking we have lagged in the race.

Operating Data for an Electric Steel-Melting Furnace

By F. L. Landon

Power Salesman, Pacific Gas and Electric Company, Sacramento, Calif.

IN most industrial processes the use of electric current as a heating medium permits perfection of operation and ease of control that cannot be obtained with any other fuel. This is especially true of the melting of steel, and the resulting metal is recognized as product of a high quality. There is installed in this country at present in excess of 150,000 kw. in electric steel-melting furnaces. These furnaces require approximately 350,000,000 kw-hr. per year. Originally, most of the electric steel produced was used in making tools and fine machine parts, but in recent years the reduced cost of production has brought about a much greater use of this high-grade steel.

In the spring of 1920 the Southern Pacific Company started operating an electric furnace at its Sacramento shops, with the expressed purpose of pouring castings for locomotive and car repairs and construction. The output was not confined to castings alone, however, a considerable part being poured as ingots for the rolling mills. Tie plates, fish plates and similar products are being rolled from this steel with great success, both as regards cost of production and quality.

The furnace used is a 6-ton, 3-phase Heroult with a basic lining of magnesite brick. It has three electrodes of pressed carbon, which are 17 in. in diameter and weigh when new approximately 890 lb. The electrodes pass through bushings in the roof of the furnace and are supported by cantilever arms which raise and lower them automatically in response to the demands of the melting charge.

Control of the electrodes is both automatic and manual. Three control motors are supplied with 110-volt direct current from a 15-kw. generator. The automatic control consists of six solenoid-operated direct current contacts, two for each phase, one causing the control motor to operate in such a manner as to lower the electrode and the other reversing the direction of rotation and raising the electrode.

Electric energy is supplied to the foundry at 2,200 volts, 3-phase, and is stepped down through a closed delta-connected 3-phase transformer of 1,500 kva. rated capacity to approximately 106 volts. Each of the three leads from the transformer to the electrodes consists of eight 500,000 circ. mil stranded cables, making a total of 4,000,000 circ. mils per phase.

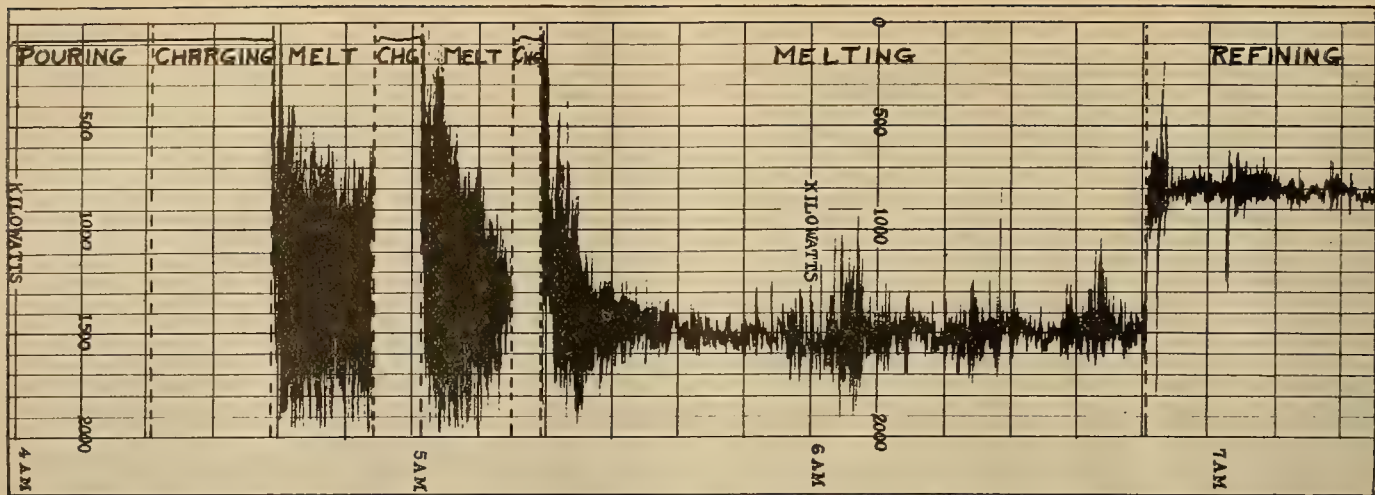


Electric steel-melting furnace at the Southern Pacific Company's Sacramento, Calif., shops pouring a heat into a 6-ton ladle.



THE Southern Pacific Company has had marked success in the operation of a 6-ton electric steel-melting furnace in its Sacramento, Calif., shops. The accompanying photographs show some of the details of the equipment. No. 1 is a general view of the furnace itself. No. 2 is a close-up of the furnace from the back showing the leads to the electrodes. A view of the switchboard and controls is shown in No. 3. No. 4 shows the spare furnace roof ready to be put in place. The lining of the roof burns out more rapidly than that of the furnace itself, necessitating more frequent changing. No. 5 shows some of the typical castings produced from steel melted in the furnace. The castings in this case are locomotive bearing journals. No. 6 shows some of the scrap used for charging, loaded in buckets ready to be carried to the furnace. In the foreground are stubs from used electrodes.





Typical load curve showing energy demand during one heat. The furnace operates continuously four to six days out of each week with a 1,750-kva. demand.

The metal used in charging is unselected scrap. However, precautions are taken to remove as much of the cast iron which may be mixed with the scrap when it reaches the charging platform as possible. Due to the small size of the charging door and to the fact that the metal is thrown in by hand, the scrap must be broken into pieces not more than 3 ft. long. A 15-ton crane operates the entire length of the foundry and carries the buckets of scrap to the charging platform. It also handles the pouring ladles.

The process of melting may best be followed by referring to the accompanying chart obtained from a recording wattmeter. The entire melting cycle may be divided into eight distinct periods.

The first two periods show no current consumption and cover the time of pouring and charging. These two intervals are of nearly equal length and, combined, cover approximately 45 min.

The charge having been completed, the first melting period begins and lasts about 20 min. During this time the current varies greatly, due to the short-circuiting action of bringing the electrodes

nearly as much as in the first period. The current is then shut off for the third and last time and a final charge of scrap added.

The seventh and eighth periods are for melting and refining, respectively, and vary in length for different heats due to varying quantities of impurities in the scrap. It will be noted that as soon as the metal is well melted down the current becomes practically constant and the demand averages 1,500 kw. at an average power factor of 85 per cent. This gives a 1,750-kva. demand. When the metal reaches the proper chemical properties, it is poured into a 6-ton ladle and taken to the moulds in the various parts of the foundry.

The linings of the furnace have an average life of 191 heats, and a roof stands up for 140 heats. Repair work, such as relining, is done usually on Sundays so that the furnace may be operated continuously during the week.

The accompanying table gives figures on operation over a period of eight weeks and is an accurate record of the input in material and energy and the output of finished metal. When it is considered that these figures are entirely satisfactory from the standpoints of production cost and quality of steel, it is little wonder that the Southern Pacific Company is seriously considering enlarging its present equipment to meet its increasing demand for high quality steel.

Test taken at Southern Pacific Company's Shops, Sacramento, Calif.

No. of days worked	No. of heats	Total tons scrap metal	Average tons per heat	Average kw-hr. per heat	Average kw-hr. per ton	Average time per heat	Average time per ton
4	31	155	5.0	2,513	567	2 hr. 29½ min.	29.9 min.
6	35	213.5	6.0	3,340	548	2 hr. 55.3 min.	28.7 min.
6	38	247	6.5	3,421	526	2 hr. 57 min.	27.25 min.
6	39	253.5	6.5	3,397	523	2 hr. 55½ min.	27.0 min.
6	37	240.5	6.5	3,438	529	3 hr. 1 min.	27.84 min.
6	36	234.0	6.5	3,467	533	3 hr. 4 min.	28.3 min.
6	38	247.0	6.5	3,468	534	2 hr. 55 min.	26.9 min.
4	25	162.5	6.5	3,440	529	2 hr. 59 min.	27.5 min.

into direct contact with the cold metal and then drawing them away to form an arc. The current is shut off for the next interval of nearly 10 min. During this time the electrodes are raised and additional scrap is added, as the melting down of the metal reduces its bulk, thus making room for additional scrap. Melting is again resumed and continues for from 10 to 15 min., the current fluctuating

Street Lighting Poorest and Cost Per Capita Highest in Small Cities.—A survey conducted by the United States Bureau of Standards, covering 362 cities, indicates that the poorest average street illumination is present in the smallest cities. These cities pay more per capita for this light, the average cost per capita in this group being \$1.02 per year. The least cost in any group is 74 cents, in the group having a population range from 150,000 to 200,000. This group has the cheapest and the poorest lighting of any of the larger cities. In the group comprising cities ranging from 200,000 to 300,000 the costs are high and the illumination the best of any group. The cities surveyed had populations ranging from 10,000 to 500,000.

Teaching the Future Housekeeper to Do It Electrically

By V. W. Hartley

Executive Manager, California Electrical Cooperative Campaign.

REALIZING that when a woman has once prepared meals on an electric range she will use no other method of cooking, members of the electrical industry of Exeter, Calif., have gone wholeheartedly to the support of the domestic science department of the Exeter Union High School. Through the cooperation of the electrical industry in that town of 3,000 people, an installation has been made in the domestic science building that would be a credit to any city.

The school serves a student body of about three hundred, the boys and girls coming from Exeter and farms near by. Many of the students are children of well-to-do families and will be the future family heads in that community. It is important that they should be given every opportunity to become acquainted with the most modern means of conducting business and the home.

Toward this end the faculty of the Exeter Union High School has devoted every effort and has made notable progress, particularly in the domestic science department. A separate building has been erected to house this department, and every modern convenience has been installed. An exceptional opportunity has been given to the girls receiving instruction in domestic science through the fact that the school authorities have equipped the small model

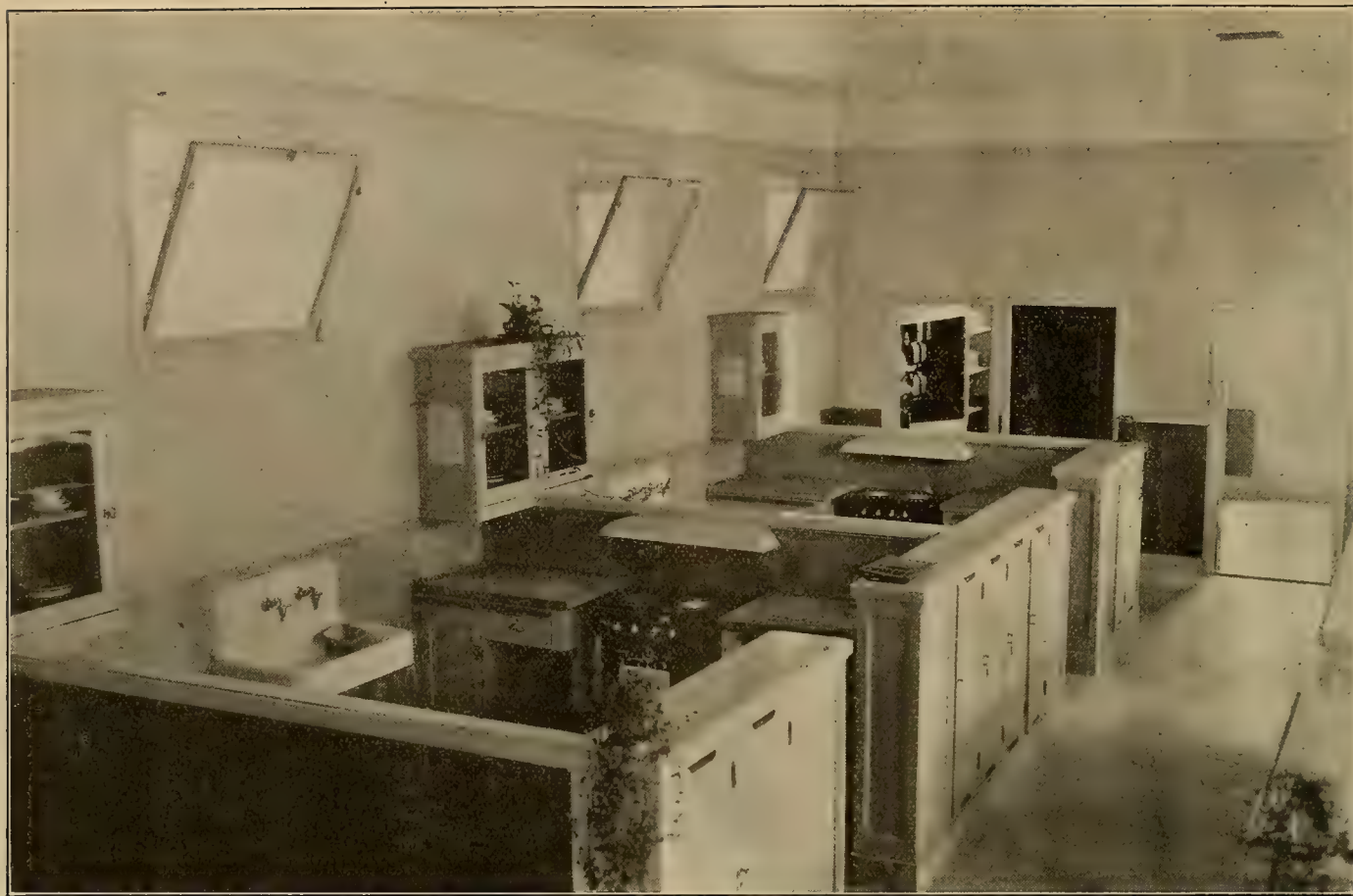
kitchens, where instruction is given, with a large line of electrical labor-saving devices.

The domestic science instruction room is divided into five small kitchens in order that the girls may prepare meals under conditions prevailing in the home. Four of the kitchens are each equipped with two electric ranges and the fifth, being half the size of the larger ones, has only one range. A master switch controlling all the circuits in the domestic science room is placed at the end of the room, so that the instructor may open the circuit on all of the ranges simultaneously if she desires to do so.

Electric water heaters are installed in the domestic science building to permit the student housewives to have hot water at all times. In this way they learn the efficiency of electricity for cooking and for maintaining a supply of hot water when they are first learning the rudiments of housekeeping. In the classes conducted in the main cooking laboratory, girls in the first-year courses learn the preparation of simple, wholesome meals. All types of plain cooking are explained to the girls, and they are allowed to prepare the meals which are later served to groups from local clubs. For this purpose a small dining room has been fitted out in the building, and there the girls also learn the correct way to serve the meals they have prepared.



Exterior of the domestic science building, Exeter Union High School.



East side of the main domestic science laboratory, showing two of the booths. Two electric ranges are installed in each booth.

Classes in sewing have also been given the opportunity to learn of the electrical labor-saving devices that make it easier for the modern woman to design and make her own clothes. Electric sewing machines are provided, and convenience outlets have been placed at points to permit the use of numerous other devices such as irons which are used for pressing the completed garments. In addition, there is a laundry in which five built-in ironing boards have been placed. Outlets for electric irons are in convenient places, and behind each board is a slate-lined cabinet in which to set the hot iron.

That Mrs. M. F. Peck, the domestic science instructor, is aware of the advantages of cooking electrically and is convinced that the electric range is the solution to the housewife's quest for the ideal cooking equipment is evidenced by a letter describing the domestic science department at the Exeter Union High School. The letter was addressed to the secretary of the California Electrical Cooperative Campaign and in part reads as follows:

"We have forty girls in our domestic science department at the present time. We have two classes in first-year cooking, which accommodates thirty-six girls. Then, also, a cafeteria class or second-year cooking class. Our first-year class meets in the main laboratory, where we have five unit kitchens, each equipped with two electric stoves.

The two first-year classes learn to prepare and serve good, wholesome food. Besides doing their regular class work, the girls plan and serve luncheons and dinners to local card clubs and to the directors of

the Chamber of Commerce. These luncheons and dinners are served to groups of ten or twelve. All the food is prepared on the electric stoves. These stoves have given us the very best satisfaction.

"The two things we strive for in our classes are speed and economy. Speed in cooking means plenty of heat and high heat. So we find the electric stoves far better than the old gas burners, which do not hold the heat as do our electric units. The real economy of electric cooking in schools lies in the fact that there is no coal or charcoal to handle, no ash to remove, no fire to tend; there is pure air, no smoke, no dirt, no gas burners to replace or renew, no uncertainty as to the cooking results, and there is absolute safety.

"I do feel that the time has come when there should be some type of electric equipment in every domestic science department."

The citizens of Exeter are equally well satisfied with the electrical installation in the high school, and the girls who have learned to prepare meals on the electric ranges will undoubtedly demand similar equipment in their own homes when they take up the duties of housewives in earnest. Through this installation, of which the community is naturally proud, the "electrify" message has been carried to many persons who would not otherwise become acquainted with the advantages of electrical equipment in the home. The electrical installation was made by E.M.M. Service, Inc., of Exeter, the California Electrical Cooperative Campaign assisting in the layout of the wiring and equipment.

Lighting and Lighting Fixtures

By H. H. Courtright*

Manager, Valley Electrical Supply Company, Fresno, Calif.

SO much has been written on the subject of lighting and lighting fixtures that it is difficult to present material that will be new in its character and that will interest those who are familiar with the subject. Much has been written on foot-candles, lumens, watts per square foot, efficiency of different types of luminaires, etc., but little has been said of the fixture business at it pertains to that of the electrical contractor-dealer. In other words, volumes of technical information have been published but nothing has been put forward to show one whether or not he should handle fixtures and, if he should do so, how to best regulate his buying and his stock.

The electrical merchandiser, insofar as fixtures are concerned, is generally divided into four classes:

1. The electrical contractor who wires office buildings and industrial plants.
2. The electrical contractor who wires residences and apartment houses.
3. The electrical contractor who has a small store.
4. The electrical contractor-dealer who has a large retail store with several small lighting fixture show rooms or with one large room for the same purpose.

An analysis of these various types of merchandiser reveals some interesting facts and is fundamental to a proper understanding of what is necessary to intelligently deal in fixtures.

Class I

The contractor who specializes in the wiring of office buildings and industrial plants is really, in effect, an electrical engineer for he has need of considerable engineering knowledge which must be applied to an understanding of his client's business in order that he may assist in the proper application of electricity to that business for the most profitable return to the client. This type of fixture dealer usually applies a definite and predetermined fixture to each job. This is partially attributable to the fact that the lighting fixtures on work of this nature are often specified by the architect who is influenced by reasons of efficiency, individuality, artistic effect and countless other considerations. In those cases (if there are any such) where the architect does not specify the lighting fixture, the contractor may select a suitable unit and, with or without the help of a jobber's or manufacturer's salesman, he may complete the sale. These commercial units are generally sold on a small margin. This is made possible by the fact that the contractor does not buy in advance of requirement and orders only a sufficient number to take care of the need of the particular job for which they are intended. In those rare instances where the contractor does actually stock the fixtures he makes strenuous effort to move his stock and not to keep his money tied up in merchan-

dise. He must keep his money turning or his net profit for the year will suffer. Frequently a stock of commercial fixtures on hand is evidence of a fixture that is out of date, is inefficient or that has for some other reason proved to be a poor buy. The styles in commercial lighting units change frequently and rapidly and very often those who have bought incautiously have been caught with a heavy stock on hand and have found themselves obligated to a jobber or manufacturer. For that reason, as well as for the others already outlined, it seems better judgment, unless one is specializing largely on fixtures and is therefore in close touch with developments in the fixture market, for those who specialize in the larger wiring jobs to buy fixtures only after they have been definitely specified.

Class II

The second class of contractor-dealer, who specializes in residence and apartment house wiring, frequently does business from his home or from a desk in an office where he is a co-tenant with others. His sales of lighting fixtures are usually to the owner or to a builder or general contractor. Such sales are most commonly made from a manufacturer's catalog or from the display in the jobber's salesroom. It is not at all uncommon practice for this type of contractor to take his prospect to the show room and to complete the selection and sales of the fixtures for a job at that place. Such procedure, of course, means that the electrical contractor carries no stock, has no investment in fixtures and turns his money at a rapid rate. This method of procedure has been made easy in late years by the fact that fixture manufacturers have in many instances materially reduced the number of stock items of their manufacture. In some cases this reduction in stock numbers has been from an original list of 1,000 separate fixtures down to 100 different types. This reduction in number of styles has resulted in the possibility of shipping fixtures already assembled and packed in neat cardboard cartons. This has made easier the handling of fixtures in jobbers' and dealers' stocks, has helped the stockkeeper to keep his stock in better shape, has kept fixtures free from dust and other atmospheric effect and has saved the dealer many dollars that would otherwise have been spent on wiring up and assembling. This so-called "package fixture" has resulted beneficially to all in the fixture business as it has enabled the manufacturer to reduce production costs and has permitted the jobber and dealer to speed up turnover. These factors have resulted in lowered cost to the consumer and have, consequently, brought about increased fixture business.

From all of the above it is evident to all that this type of electrical contractor-dealer can sell from catalog or display room, place his order with the jobber and have his order delivered complete to the

*An address delivered before the convention of the California State Association of Electrical Contractors and Dealers, Santa Cruz, Calif., Sept. 19-21, 1924.

job within a few days. Because this contractor carries no stock and works purely on the principle of turnover he is able to sell fixtures on a very small margin.

Class III

The third class of electrical contractor who has an established place of business is in a dangerous position. He has an investment in wiring supplies and materials, appliances and fixtures and has a very definite overhead. If he would tie in with a jobber who carries a stock of reliable and up-to-date fixtures, drawing on the jobber as needed, receiving prompt shipment and paying for the goods in accordance with good business practice, he would be in a favorable position. However, he generally tries to carry in stock a line of from ten to fifty of each of the fixtures in his sample stock, figuring that to do this makes it easy for him to deliver the goods as soon as sold. He carries this heavy stock partly in order to avoid the routine of ordering frequently and partly to prevent a competitor from handling the same lines. This is brought about in part by the fact that many manufacturers and jobbers will, when a dealer buys a sufficient quantity of one item, confine to the dealer so ordering the sales of that particular line in that town. This practice often results in a dealer becoming overloaded with stock, running up a high overhead, getting behind in his accounts and generally getting into trouble. However, many of this type of dealer still think they can successfully follow out this practice. If the dealer would instead carry only a sample line of fixtures, keep his samples new and up-to-date and work on a quick turnover, thus working all of his capital, he would not get caught with a big stock when styles change and when business slackens.

Lighting fixtures are a very dangerous commodity to handle. If there is little or no building it is impossible to sell fixtures at even fifty cents on the dollar. The jobber will be in much better position with reference to stock and dealer credits if the dealer will carry only samples and will order as required instead of ordering in large quantities. The jobber will also be better able to gage the market when dealers follow out this practice. The dealer, therefore, is playing fairer with the jobber when he follows out the plan of carrying only samples than when he tries to carry a heavy stock.

The contractor-dealer who has an established place of business should never try to manufacture fixtures, for the fewer the types of fixture carried in stock the faster will be his turnover and the greater his profit at the end of the year. He should not, either, try to make use of a spraying machine for by so doing he is trying to match finishes and to improve on the manufacturer's product. The factory, needless to say, has facilities superior to those of the dealer for the purposes of manufacture. When dealers by accident produce a fixture that sells readily they generally proceed to load up with fixture parts and to start on the assembly of fixtures, devoting time to this work that should be devoted to their regular efforts. This immediately places their non-manufacturing competitor, who buys from sample only, in a position of decided advantage.

Class IV

The fourth class of fixture dealer is distinct and unique from all the others. He understands the business both from a financial and an artistic viewpoint and he sells fixtures on their individuality. Each home has its particular decorative scheme and its individuality and there will always be a field for selling fixtures in this way. This type of dealer will prosper as long as he adheres to the principle of selling, even to a limited market, fixtures that are distinctive and, perhaps, primarily decorative. His overhead is heavy and his turnover is slow but the margin made possible by the nature of his business offsets both of these factors.

There is a very definite field for all of the above classes of fixture dealer and so long as each stays in his particular field he should prosper. If, however, he fails to realize the limitations placed about him by circumstances and tries to enter into competition with those in the other branches of fixture merchandising, he is very liable to come to grief.

Many well-intentioned dealers have made the mistake of trying to progress too rapidly and have entered a merchandising class for which they were not fitted either by experience or by finances. Inasmuch as the class lines on fixture merchandising are clearly drawn and as the sales plans of each class differ widely in some respects from those of every other class it is essential that a dealer fit himself for following the general procedure of those in the class he proposed to enter. Very often a dealer is attracted to other fields of fixture activity by the apparent success of those already in the business but who have had many years of experience in their particular line. The matter of adequate preparation for competing with firms already well established does not occur to him as one of the requisites for success.

One ever-present feature of fixture sales is that every building that is constructed in a territory served with electricity, or that may be so served in the near future, demands lighting fixtures and offers a sales possibility. The changes in lighting modes and equipment offer a steady and persistent follow-up sales possibility and, in reality, the building remains a prospect as long as it stands. This is well evidenced by the fact that department and other stores, clubs, hotels, halls and other public buildings, as well as many residences, change their lighting equipment frequently. Developments in the art of illumination, the application of color lighting to the home and for commercial effects, the attention to physical welfare and the increase in the number of students are all working for the more extensive distribution of lighting units. Each unit means a sale by some enterprising fixture dealer and he also has the possibility of opening new channels. Many dealers have done conspicuous work in developing fixture business even in the face of seemingly unfavorable conditions.

On the whole it might be said that the merchandising of fixtures, like the selling of anything else, resolves itself largely into a matter of common sense. It is better to be consistently successful in a limited way than to be a glaring example of what not to do.

Better Public Relations by Telephone

By R. F. Bonsall*

Consolidated Gas Electric Light & Power Company
Baltimore, Md.

IN keeping with these modern busy days, the use of the telephone for the transacting of all kinds of business is rapidly displacing the personal visit. This is borne out by the fact that in the last year, in the city of Baltimore, the number of telephones has increased over 100 per cent. This applies not only to the downtown section, but to the home districts. The modern housewife sets apart each morning a certain time for the telephoning of her orders, and straightening out matters relating to the home, over the telephone; and in those houses where there is no phone the tendency has grown to use a neighbor's phone or the phone at the corner store, in preference to making a trip downtown, or for the purpose of getting quicker service.

It has been the endeavor of our company to make it as easy for the customer to do business with as any merchandising organization, and this was one of the ideas in mind when our general service department was established for the handling of complaints and inquiries and all relations with the public along this line. Under the supervision of this department there is a general service telephone bureau, separate from our application and emergency boards, where the customer may receive the same service as he would if he were standing at the counter. There are ten positions on this board: six in use regularly and four for peak days. This board is manned by six telephone service salesmen, with a reserve of four counter service salesmen.

The calls are placed on this board by our general telephone operators, who do a limited amount of questioning; and these inquiries and complaints so received cover almost every phase of the company's operations. Applications or trouble calls are handled here also, if once placed there by the regular operator—as the telephone service salesmen are instructed under no circumstances to transfer a call. The customer holds the line, while the necessary information is secured from the person or department involved by the salesman plugging in from his own board or through the general operator. If an unusual amount of investigation or time is required, the customer's telephone number is taken, and he is called later; but in nearly all cases it is secured while he waits, except where the explanation of a high bill is asked for, requiring reference to the meter-reader's hand-book or bill schedule. The necessary information is then taken by the salesman, and customer told one of our outside service men will call to go over the case.

The men on this board receive the same training in company policies and methods as our counter salesmen; and, in addition to this training, there is taken into consideration the fact that these men are handicapped by not being face to face with their customers, thus being compelled to get their personality across without the advantage of seeing what is pass-

ing through the customer's mind as they talk. The "smile" in this phase of our work must be put in the voice; and, as telephone conversations are usually briefer than face-to-face conversations, they must also make their answers and explanations to the point, without being abrupt or attempting to cut short the customer in any way. These men, like the rest of our department organization, are familiar with the operations of the company, and have been put through our regular educational courses; that is, have accompanied our shop men through different phases of their work, have been with the other men of our department in their various operations, and through other departments of the company to learn their methods.

The men on this board also arrange for any outages made necessary by maintenance work on the distribution system. A statement of the territory affected by such an outage is furnished by the distribution department. Each customer, other than residential, is telephoned to ascertain if he will be inconvenienced by an interruption in his service between certain hours. After a common time is arranged for, the distribution department is notified. If it is more convenient to customers, the work is done on Sunday, holidays, or any time during the night. We have always found customers are ready to cooperate when an explanation is made beforehand, and made clear to them by a trained employee instead of in a haphazard way.

This board is also used to ascertain the class of service we are giving, and the promptness with which orders are executed. Each day about 25 per cent of the various classes of orders executed the day before, except meters set, are distributed to these men, who, during off-peak periods, call the customers, to ascertain if their complaints have been properly taken care of; if the repairs were made as requested; if certain goods were delivered satisfactorily. A statement of these results is sent monthly to the various departments, and acts as an incentive to better work.

A monitor board is installed in the manager's office, through which it is possible to hear the salesman's conversation with the customer, and this board is monitored by several people at various times, to learn the way the telephone service salesman deals with the customer, and to coach him afterward if necessary. The men on the board understand that this in no way means to be a "spy" system, but is merely in line with our campaign for good service, and to broaden our educational work with them.

We have had numerous expressions of satisfaction from customers of our service rendered over this board, which results in a saving of time, energy and expense to the customer, and the increasing of the customer's good will toward the company. All indications seem to point to an expansion of this telephone service, necessitated by the increasing inclination on part of our customers.

*Excerpts from "Service Suggestions" of the Customer Relations Committee of the National Electric Light Association.



A Modern Standard for Estimating Electric Wiring Contracts

By Clyde L. Chamblin

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GAMBLING, alias contracting, must stop in the electrical business. This feature of the building industry is receiving the most serious consideration by all concerned. Manufacturers, jobbers and contractor-dealers alike are deeply interested. The latter particularly have come to a realization that they have been too long the pawn of the general contractor. It is now recognized that only by a definite change of business procedure can the electrical contractor-dealer in any measure insure his future. The high mortality rate and the long list of those that have failed in the contracting branch of the electrical business certainly indicate the need for such business change. In electrical contracting there are many evils that are common to other building trades, where estimates are required in advance of the start of the work. There are so many indeterminate factors, the chief of which, however, is labor, that any master electrician or master tradesman is taking chance enough merely by going into the business. To put up with other hazards; in fact, to sponsor them by means of certain trade practices, is no longer within the realm of possibility for those who wish to remain in their chosen line of work. In view of the fact that less than one electrical contractor in ten remains in business longer than five years, it seems apparent even to the dullest mind that corrective steps must be taken immediately.

Electrical contractor-dealers are faced with customs that may or may not be of their own making. However, the power to unmake these customs remains very definitely in the hands of the contractor-dealer. First, there is the fixed-fee system. This system offers no incentive whatsoever to the contractor-dealer to put forth his best efforts and apply his engineering knowledge to the job in hand. He knows definitely in advance, before he starts the work, how much he is going to get out of a job, and it is no more than natural that he should leave the completion of the work to his foremen and devote his own time to more productive efforts. This more productive effort may include the solicitation of new work or may involve supervision of a job or jobs that

have been taken on more profitable basis than that afforded by the fixed-fee system. It is true that the fixed-fee system shows that in very few cases have contractor-dealers been able to establish a fee sufficient to compensate them satisfactorily for all of the factors involved. In fact, on most fixed-fee jobs the master contractor would be better off were he to don overalls and become a mere journeyman. It being definitely established beyond question that the fixed-fee system is not advantageous, it then becomes incumbent upon the contractor-dealer branch of the electrical industry to see that this system is abolished.

The next system for consideration is what is known as the "cost plus" system. General contractors frequently take jobs on a cost plus basis; that is to say, cost of material and labor plus 10 per cent. The 10 per cent of the entire cost of the building and material represents the general contractor's profit. This means, for example, that if the cost to the owner is \$500,000—and this cost, incidentally, is not ordinarily guaranteed—the general contractor's profit will be \$50,000. This is nearly a net profit, as he establishes a field office on the job, for which the owner pays, and his expense is confined largely to a telephone installed in this job office and to his own supervisory time. The general contractor in turn sublets the various building operations to subcontractors, such as cement workers, steel workers, plumbers and electricians. These subcontractors in turn are required to purchase materials and furnish labor for the performance of their part of the contract. Labor must be paid weekly in cash, and material bills must be paid in accordance with trade practices. This means normally that the subcontractor must stand his entire cost of a job until such time as the general contractor repays him. Payment terms on subcontracts differ, but they consistently leave the subcontractor holding the bag. It is thus shown that the general contractor is in reality doing business on the profits of the various subcontractors. The subcontractors, in other words, are acting not only as bankers but as philanthro-

pists. The general contractor can afford to do business on the cost plus 10 per cent basis, on account of his low overhead.

The situation with the electrical contractor, however, is entirely different. There is probably not an electrical contractor in the country today whose overhead is not at least 15 per cent, and in most cases it runs in excess of 20 per cent. Those who feel that their overhead is less than 15 per cent should most certainly consult an expert accountant at once, for this failure to recognize overhead is a contributing factor to the demise of over 90 per cent of contractor-dealers who fail to stay in business for five years or longer. It is therefore apparent that no electrical contractor-dealer can afford to take a job at cost plus 10 per cent, unless cost is made to include all items of overhead. Inasmuch as this is not the common basis of figuring cost—which normally includes only the cost of material plus the actual cost of labor—it is at once evident that cost plus 10 per cent for an electrical contractor is ruinous.

"Cost Plus" System Unfair

Any business contract that gives either party an unfair advantage is fundamentally wrong and is, in effect, destructive rather than constructive. Furthermore, it destroys business confidence, and without that confidence business can never succeed. The "cost plus" system seems unfair to the owner because it places him at the mercy of the general contractor. The more material and labor that are used, the more will be the general contractor's profit. The higher the gross cost, the better the job from the contractor's point of view, and the "cost plus" basis offers no incentive to intelligent buying and efficient management. Material jobbers are put to greater expense through handling small packages, broken lots and similar items, and this increased expense is reflected in the dealer's purchasing price.

Inasmuch as the general contractor is the only one who benefits from a "cost plus" job, it must be apparent even to the dullest mind that this one-sided method of transacting business must be abolished. The "cost plus" system has been fostered by general contractors, and subcontractors have followed without stopping to analyze the situation as it affects them. General contracting is not a distinct trade, as is electrical contracting, plumbing, painting and plastering, which deal with distinctive lines. A subcontractor's cost of doing business concerns no one but himself, and there is no reason why this information should be placed in the hands of a general contractor or a building owner. Manufacturers do not tell jobbers what their production costs amount to, nor do jobbers tell contractor-dealers their merchandise costs. A shoe dealer getting \$10 for a pair of shoes does not tell what he pays for them, nor does a tailor state the cost, to him, of a finished suit of clothes. There seems therefore no logical reason why the electrical contractor-dealer's costs should be broadcast by taking a job on a "cost plus" basis. It is not intended by this statement to indicate that electrical contractor-dealers should be or are guilty of sharp practices or excessive profits.

The general hazards of a contracting business are great, but the public at large cannot understand any allowance that might be made as a factor of safety.

After several years of study of the situation, including an analysis of the reasons for the early business death of many contractor-dealers, a system of estimating has been evolved that to a large degree eliminates all uncertainties. This system has been compiled in the so-called "Electrical Data and Sales Book." Briefly, this book contains a list of all items used in electrical construction, together with their proper list selling prices to insure reasonable profit, and it further provides discounts that may be applied to large jobs consistent with good business practice. This book provides all of the necessary information for estimating a job of any size, including extras. This system seems eminently fair, both to the owner and to the contractor-dealer, as it establishes definite prices on material and assures a fair selling price, while at the same time a sufficient allowance is made in computing data book prices to cover overhead and supervision. The book is convenient in form and is arranged for facility in checking invoices, as well as job costs. The service furnished in connection with the book keeps it up to date and consistent with current market prices.

In order to insure accuracy of the prices shown in the electrical data and sales book, as compared to current market costs of materials, manufacturers and jobbers keep the publisher informed of price changes; for example, the jobber notifies the publisher of the data book of the current prices on wiring materials and supplies. Then, with the exception of such items as lamps, heating devices, vacuum cleaners, motors and fans, which are sold at manufacturers' list prices, the publisher of the data book suggests a fair retail price for specific wiring operations, taking due cognizance of overhead expense and legitimate net profit. It has been the experience of most contractor-dealers that the average overhead is 24 per cent of gross sales, and that if the contractor-dealer is to be successful he must have at least 10 per cent net profit. It therefore seems self-evident that in order to obtain this profit it becomes necessary to increase the trade selling price by about 52 per cent. Any contractor-dealer who is doing business on less than 10 per cent net profit is certainly in a poor way financially, and no way has yet been evolved to produce this 10 per cent net without marking up the selling prices of materials 52 per cent.

Operation on Data-Book Basis

Many contractor-dealers who are somewhat handicapped by lack of sales experience have hesitated to approach their customers on the basis of the data book. However, it seems to be human nature to pay a proper price for any article commensurate only with the value the article has or will have in the mind of the purchaser. On this basis it is not difficult for any contractor-dealer to quote successfully on the basis of data book prices. Some electrical contractor-dealers have even gone to the extent of furnishing the data book to builders and have subscribed for renewal sheets for the use of the builder.

This has kept the builder supplied at all times with the same price information available to the electrical contractor-dealer. When such contractor-dealer secures a wiring job from such builder, he arranges to deliver to the builder's foreman a material slip showing all material delivered on the job. He also makes out duplicate time cards of his men on the job and delivers them to the builder's foreman. In this way the builder is kept fully informed at all times as to the progress of the electrical contract. At the end of the month this electrical contractor bills the builder for the material in accordance with slips already presented, and for labor in accordance with time cards. This enables the builder to check prices of the work as billed by the electrical contractor against the data book. This seems to offer the only absolute check for the builder as to the progress and cost of electrical work. In certain cases where the material cost has been considerable, say, for example, \$2,000 or more, some contractor-dealers have made a practice of passing on to the builder the extra discount, or a portion of the extra discount, received from the jobber for quantity purchase. This practice of passing on the discount, however, has not always been followed. Its application must be left to the discretion of the individual contractor-dealer.

The plan as described seems to offer a basis of operation that must make for the unlimited confidence of all concerned, and it should go a long way toward eliminating the many deceptions, hardships and even financial losses that have been the history

of electrical contractor-dealer operations in the past. For the guidance of those who may desire to apply it to their particular business, a form of contract based on the plan outlined and one that has been worked out by some contractor-dealers who have operated on a data-book basis accompanies this article.

AGREEMENT by and between _____, party of the first part, and _____, party of the second part, dated _____, 192____:

The party of the second part agrees to furnish electrical material and equipment for the mechanical installation as directed, in the building of the party of the first part, located at _____, and to install same with expert mechanics as fast as the building structure will permit. All material to be of the best grade, of reputable manufacture, and subject to the approval of the party of the first part or his representatives.

The party of the second part agrees to remove for cause any mechanic who in the judgment of the party of the first part, or his representative, is unqualified, and to keep his mechanics on the job covered by the Workmen's Compensation and Public Liability Insurance at all times.

The party of the second part agrees to deliver to the party of the first part, or his representatives, material slips with each delivery of material to the job, and duplicate time cards of all mechanics employed on the job.

An invoice covering the material and labor for the preceding month will be rendered by the party of the second part, as shortly after the first of the month as possible, and the party of the first part agrees to pay for same in accordance with the prices published in the Pacific Coast Electrical Data and Sales Book of current date, less a discount of _____ per cent (_____%), and labor at the rate of one dollar and fifty cents (\$1.50) per hour net.

Party of the First Part.

Party of the Second Part.

Doing Things Better Electrically

THE applications of electricity are so many in number and so varied in character that it is not uncommon to have something new brought to our attention at frequent intervals. In many cases these seemingly new applications are really not new at all but will prove on investigation to have been employed for long periods of time. Frequently there are located applications of electrical energy that are so strikingly simple in their effectiveness that they cause us to wonder why we have not made a similar use. This is particularly true in mechanical operations and it is, perhaps, a question whether every mechanical operation cannot be performed in a better way by the use of electricity. This article gives some very simple yet very practical uses of electricity and shows in a limited measure the almost infinite possibilities of electrical application.

Signals in a Flour Mill

In a flour mill, all the bins for the different grades of flour are on the top floor. Screw conveyors in the bottom of each bin cause the flour to flow down a chute to the floor below where it is blended together and thoroughly mixed. The flow from each bin must be steady in order that the blend may be uniform. The motor control and operating levers to the bins are on the lower floor and the problem

arose how to let the blender know if one of the screws jammed, as often happens.

A metal case, similar to a lamp annunciator, was made, large enough to take a 15-watt lamp in each pocket, and there was one pocket to each screw conveyor. On the end of the screw shaft, which extended outside the bin, a trigger was mounted, and as the shaft revolved this trigger operated a make and break single pole switch mounted in a box alongside. As long as the screw revolves, the lamp corresponding will flicker, but if the screw stops the lamp will burn steadily, or be out altogether, according to the position of the switch when the screw stops. Simple? Yes, but the simpler things are harder to discover sometimes than those that can be worked out by mathematics.

Push Button Controls

There is a building in which a number of motors driving the ventilating system are in penthouses on the roof. The motors are d.c. and brush trouble on one of the motors set it on fire. This fire burned briskly until discovered by a passer-by on the street. The occurrence of this fire raised the problem of devising a plan to warn occupants in the building of any overheating or dangerous rise of temperature in the penthouses. A thermostat was placed over each motor, set at the desired temperature, and a pair of

wires run down to an annunciator in the engine room. Whenever the temperature of a motor reached the degree set on the thermostat it immediately registered on the annunciator, and was a great safeguard against fire hazard. Another feature of this system is that the motors are all started from the ground floor by push button control. The rheostats are solenoid operated, and on one occasion the arm did not pull clear over to the full running position, which meant that the resistance of the section still in series with the motor was burned out.

The danger of this was overcome by arranging contacts on the face of the rheostat at the extreme running side, and by attaching an extension on the traveling arm these contacts were shorted when the arm had reached the running position. This lighted a small red lamp at the button location and after pressing the start button it was only necessary to wait till the lamp lighted to know the motor was running O.K.

Such rapid strides have been made in the adoption of the push button control for motors that it is reasonable to predict the early discarding of the manually operated starter, both for a.c. and d.c. motors. The many advantages of push button control over the old type have been so generally advertised by the manufacturers that it hardly seems possible to mention any additional uses.

Remote Control and Safety Combined

The average plant employs men who have not the least idea of electrical machinery, and the strains put on motors by improper starting have caused many a rewind, with resultant expense, both as to the cost of the rewind and the loss of production. The push button absolutely eliminates this hazard. The motor always gets the right amount of current at the right time, and it stands to reason that this means prolonged life.

Probably one of the strongest points in favor of push button control is the advantage of being able to place the start and stop buttons at as many points as may be desired, and at a minimum of expense. Large printing presses have been equipped with this type of control for a long time, but in most cases direct current was used. Now by using slip ring motors, practically the same speed control can be obtained on a.c. motors, and push button control can be recommended for all classes of service.

Automatic Motor Control

As an example of this development, we have in mind a large bread mixer, run by a 35-hp. two-phase motor. A button is pressed and the motor runs for a predetermined speed for a predetermined time, then automatically picks up to full speed and after running a certain length of time, stops. Each operation can be set on the control board and thereafter buttons only are handled. This means that all batches of dough are mixed exactly alike, the human element not entering into the process.

Control of Belt Conveyors

Another application is on belt conveyors. By arranging a trigger to press the stop button when goods are not removed at the proper station, or if

the belt becomes jammed, the motor stops and upon removal of the goods immediately resumes its way. There are several similar applications that can be made in connection with conveyors of different types. The whole industry is striving to make electricity safe and fool-proof and a reliable servant of man. The development of push button control of motors is a substantial contribution.

Externally Operated Switches for Switchboards

Since the development of the externally operated switch, this type is being more generally used for industrial and commercial meter boards and distribution centers. Several methods have been adopted for their arrangement, the cheaper way being to screw them on wood backing and tie them together with metal troughing.

A better type of board is made by building up an angle iron frame, on the same order as for a slate board, and covering same with heavy sheet iron. The troughing is carried along the back of the board and all conduits enter the switches from the back. The entire front, including switches, can then be painted black, gray, or any other color desired, and this makes a very neat and workmanlike job.

The principal advantages of this type of board are that a switch can be replaced in a minimum amount of time and that by extending the troughing with the feeder beyond the present requirements, future switches may be added without upsetting the rest of the board, and no idle investment in unused switches is required.

While some contractors use nipples and conduit fittings for carrying their feeder bus between switches, metal troughing will be found to be a great deal easier to install. It gives more space to work in, and makes a job with just as pleasing appearance. Also, by carrying the trough from the main switch and bringing the meter loops up through porcelain bushings, a neater job is made than by bringing the wire out of the service switch open, as is often done.

Why Oversize Switches Heat

While discussing switches, it might not be amiss to mention the necessity of well soldered lugs where heavy loads are carried. It is not uncommon for switches rated well over-size for the load carried, to heat badly. This is caused in most cases by the wire not being properly soldered in the lug, or by the lug not being clean at the contact surface. The secret of a properly soldered lug is to have the wire and lug thoroughly cleaned and hot before soldering. If either the wire or the lug is not heated through, the solder will not stick to the entire surface, and this lessens the electrical conductivity, and heating of the switch may then result. Repeated heating and cooling of the fuse clip end of the switch usually results in a loss of temper, the clip does not then make a close contact with the blade of the fuse and a complete failure of the switch follows.

Neatly arranged switchboards, whether at the meter or distributing center, are the best visible signs of good engineering, and a well designed board becomes a permanent advertisement for the contractor.

A Practical System of Accounting for Contractor and Dealer

By F. V. Mitchell

IN the Nov. 15 issue of the Journal of Electricity was printed a Sample Cash Book-Journal showing use in recording daily cash transactions and invoices taken into Accounts Payable during the month, and attention was called to the fact that the book was ruled off at that point, to be followed by the monthly closing journal entries.

To avoid confusion and at the same time make the source of the entries appear clearer, instead of presenting all the monthly closing journal entries they will be inserted step by step, particularly after the presentation of a form from which an entry should be made. For example, in the Dec. 1 issue the Sales Summary and the Summary of Returns and Allowances were outlined in Figs. 1 and 2, respectively, and the following are the monthly closing journal entries referred to and made therefrom:

Description.	Acct. No.	Dept. No.	Dr.	Cr.
Accounts Receivable	3		\$684.90	
Sales Account	50	3		\$684.90
Store charges, month of October, 1924.				
Cost of Goods Sold—Material.....	52A	3	472.50	
Merchandise Account	10	3		472.50
Cost of store charges, month of October, 1924.				
Accounts Receivable	3		5,984.00	
Unfinished Contracts	16	1		5,984.00
Wiring job charges, month of October, 1924.				
Accounts Receivable	3		2,547.00	
Unfinished Contracts	16	2		2,547.00
Fixtures job charges, month of October, 1924.				
Returns and Allowances.....	51	3	63.50	
Accounts Receivable	3			63.50
Store credits, month of October, 1924.				
Merchandise Account	10	3	38.50	
Cost of Goods Sold, Material.....	52A	3		38.50
Cost of store credits, month of October, 1924.				
Returns and Allowances.....	51	1	201.00	
Accounts Receivable	3			201.00
Wiring job credits, month of October, 1924.				
Returns and Allowances.....	51	2	129.00	
Accounts Receivable	3			129.00
Fixtures job credits, month of October, 1924.				
Cost of Goods Sold, Material.....	52A	3	229.15	
Merchandise Account	10	3		229.15
Cost of cash sales, month of October, 1924.				

No detailed list of the latter amount was contained in the Sales Summary, as there is no necessity of summarizing the Cash Sales, the total

amount of same being obtained direct from the Cash Sales column of the combined Cash Book-Journal, and the total amount of the costs for the above entry can be ascertained very readily by preparing an adding machine list of the costs of the items as appearing on Cash Sales Tags. The thought may occur that, to expedite matters, the total amounts for all the other above entries could be obtained through the preparation of adding machine lists instead of a Sales Summary as outlined, but this information is so important for reference purposes in connection with charges that the latter method will be found the more expedient in the long run.

Another reason for the preparation of a Sales Summary is that it can be used to good advantage in effecting a daily proof-posting method of the entries to customers' accounts. For example, the Store Charges are entered daily in the Sales Summary from the office copies, and the Selling Price column should be totaled in small pencil figures to that point. The amounts are then posted to the customers' accounts from the office copies, and markers are left in each customer's account to which a posting has been made, from which an adding machine list is prepared of all the accounts posted on that date. For the first day of each month, the total of this adding machine list should equal the total of the Selling Price column at that date. For each preceding day of the month, the total of the adding machine list should equal the difference between the final total and the previous day's total of the Selling Price column. The Job Charges, Store Credits and Job Credits would be proof-posted in the same manner. This same method should be used in posting the entries from the Accounts Receivable Dr. and Cr. columns and Accounts Payable Dr. and Cr. Columns of the Combined Cash Book-Journal. This constitutes a definite proof that the correct amounts have been posted to the individual accounts and practically insures the exact agreement of the subsidiary Accounts Receivable and Payable ledgers with the respective General Ledger Controlling Accounts at the end of each month.

The next step in the monthly closing routine is the distribution of the Payroll for the month. It will be recalled that the number of hours worked on each job was entered on the Job Cost Sheets from the Daily Time Cards, and that a list of the total labor along with the material put into jobs during the month was prepared from the Job Cost Sheets at the end of each month. Due to the fact that the overhead on the jobs cannot be entered on the list at this point, an illustration of it will not be presented in this article until it can be completed, to avoid the necessity of repeating the form. How-

ever, the total amounts of the Labor columns of Departments 1 and 2 that will appear on it are used in the following monthly closing journal entry:

Description.	Acct. No.	Dept. No.	Dr.	Cr.
Work in Process Account.....	15	1	\$1,411.25	
do.	15	2	402.50	
Salaries Account	70	1	773.25	
do.	70	2	549.50	
do.	70	3	175.00	
Accrued Payroll	32			\$3,311.50
Distribution of payroll, month of October, 1924.				

It will also be recalled that the number of hours worked by each workman was entered on the Weekly Payroll Record from the Daily Time Cards, and the amount remaining unpaid on this record at the end of each month should equal the credit balance appearing on the Accrued Payroll Account No. 32 in the General Ledger at the end of the same month. The credit balance in this account at the beginning of the month represents the amount of previous month's payroll unpaid at that date. The account is credited with the total amount of payroll accrued during the month as contained in above entry, and is debited with the total amount of payroll paid during the month from the combined Cash Book-Journal. Therefore, the credit balance shown in this account must necessarily equal the total amount of unpaid payroll as shown on weekly payroll record, to constitute a definite proof that all the labor has been charged to jobs properly.

As the information is required for the departmental distribution of some items of overhead and also for the Provision for Doubtful Accounts entry,

it is necessary at this point to ascertain the total amount of jobs finished during the month. Due to the fact that these data are obtained from the Work in Process Summary and other parts of it cannot be completed at this point in the closing routine, the illustration will not be presented until that time to avoid repetition of the form. However, the following monthly closing Journal entry will be prepared from the total accounts contained therein:

Description.	Acct. No.	Dept. No.	Dr.	Cr.
Unfinished Contracts.....	16	1	\$5,867.50	
do.	16	2	2,476.00	
Sales Account	50	1		\$5,867.50
do.	50	2		2,476.00
Job finished during month of October, 1924.				

All entries have now been made affecting Sales Account and the following Doubtful Accounts Provision can be made, as well as the Provision for Depreciation entry:

Description.	Acct. No.	Dept. No.	Dr.	Cr.
Doubtful Accounts	63	1	\$56.65	
do.	63	2	23.50	
do.	63	3	6.20	
Provision for Doubtful Accounts 3A 1% of net charge sales, month of October, 1924.				\$86.35

Description.	Acct. No.	Dept. No.	Dr.	Cr.
Depreciation	62		\$119.55	
Provision for Depreciation—				
Automobiles	20A			\$69.50
Furniture and Fixtures.....	21A			33.35
Tools and Equipment.....	22A			16.70
Monthly depreciation, October, 1924.				

A Glance Into the Future

By H. N. Nelson

Enterprise Electric Works, San Francisco, Calif.

WE have just passed through a business condition upon which we may well take time to reflect. Fortunately most of us have come prosperously through the seeming depression and have, by the exercise of discretion and good judgment, placed ourselves in strengthened position. We have, too, increased the spirit of friendly cooperation in competition and have established a regard for the real principles of business. The period of slow business, instead of being a detriment to us has really been a benefit if we can now recognize the handwriting on the wall and can properly interpret what we see there. One of the things that has been accomplished is our establishment on a sound basis with clear-cut policies and a common understanding. Another big accomplishment is the reorganization of the California State Association of Electrical Contractors and Dealers and its steady, substantial expansion.

However, despite the excellent progress made under what have seemed unfavorable conditions, we must not be too confident and we must not proceed except with due care and with ordinary business precaution. It is necessary to view the future dispassionately and to take stock of the constructive effort required to so strengthen the position of each member of the industry that no future business conditions can react disadvantageously.

There seems little doubt but that competition will increase. The natural increase in population and the attendant entry into the business field of more and more individuals and companies, the extensive building program, both residential and industrial, under way in this section and the abnormal use of electricity in the Pacific Coast territory, all will tend to bring about a rapid growth of firms engaged in the electrical business. This is particularly true of those engaged in wiring and sales. It therefore be-

comes incumbent upon each man in this business to ensure himself of good business conditions for the future. This does not mean that he will provide new buildings to be wired or that he will build new factories, but it does mean that he will so conduct his business that it will be able to withstand any financial storm that may arise. It is necessary to recognize at once that the day of easy money is past and that the future is to be built on competitive effort. This will mean close attention to all those fine details of business that have always accompanied success and will mean that the loose-minded individual cannot hope to succeed or prosper.

Winners in Race Must Heed Rules

The matter really seems to resolve itself into this: all members of this industry are starting without handicap. The race is bound to go to the fittest. Only those will be fit, and will stay in the race, who heed the rules of the contest. These rules are the rules of ordinary good business and their observance means success. Failure to observe these simple tenets means business obliteration. The business roster is filled with the names of those who have been overwhelmed by the wave of oblivion that followed a course of carelessness. This business race, then, is bound to go to those who prepare themselves; who, in other words, "train down" for it.

Preparation for the contest will consist, among other things, in building a sound credit foundation. Such a foundation can only be built by pursuing ethical business tactics with due regard to costs, quality of work performed and fair competition. Those who have not conserved their resources and who have not exacted a price for their work in keeping with the cost of production are bound to be hurt during a period of repressed activity. Those who have kept accurate records of their costs and have charged for services in accordance with their real worth, thereby permitting the establishment of a reserve fund, will find that they will gain more in the long run than the profit on the business they lost to cut-price competitors. No real good ever came from price cutting and, in the electrical business, much real harm has been done. This one characteristic has been the cause of many of the contractor-dealers falling behind in the race and has resulted in their ultimate withdrawal. Nevertheless, there have been many who failed to profit by the experience of those who have gone before and each day sees some new one who is willing to learn only from experience that unsound policies cannot be followed successfully.

Marked Need of Cooperation

The responsibility for the pursuit of legitimate business practice rests equally upon all branches of the electrical industry. The contractor-dealer, jobber, manufacturer and power company are alike involved in seeing that all branches of the business are conducted ethically and with due regard for honesty and fair dealing. They are alike concerned in the success of each other and each must bear in mind that all the others are as necessary to the development and application of electricity as is his own

branch. For that reason each must meet the others in absolute fairness and with confidence undefiled by doubt or fear. It is, therefore, necessary, first, to purge from the mind all thought of unfairness, of uncleanness and of uncertainty as to relations within the industry. This having been done, a long step will have been taken towards the stabilizing of what should be the fastest growing industry in the world and one that should be profitable for all engaged therein.

There has been, in the past, some distrust on all sides. Manufacturers, jobbers, central stations and contractor-dealers have alike been prone to look askance at each other and to complain without offering to construct. Until lately few, indeed, have been disposed to take the time for constructive thought and effort. The time for doubt and distrust is past and the future, if the electrical business is to grow as other businesses have grown, must be marked by a strong pulling together in a spirit of cooperation such as has never yet been developed within the industry. Certainly there is need enough for this cooperation.

Too Many Contractor-Dealers

In an analysis of the situation we find, starting with the contractor-dealer, that there are too many firms engaged in this branch of the business. Many of those who are trying to function in a contracting capacity are unequipped mentally, financially and morally to fulfill their obligations to society and to the general economic organization. Some of the contractor-dealers now in business have been urged to start out for themselves by a picturization of enormous profits and easy money, this picture having been painted by some one who wanted to make a new customer. Too often it has happened that such a man entered business in a place already well served by those who really understood their business and who were trying conscientiously to serve the public at as reasonable cost as circumstances would permit. The entry of a new firm did not create new business but did result in the finer division of what business the community afforded and, ultimately, generally resulted in a war of price cutting, unprofitable transactions, deferred settlement of supply bills, impaired credit and, too often, finally bankruptcy.

It is indisputable that the burden of bankruptcy is not borne by the one who failed, nor yet, generally, by the wholesaler that supplied the goods. The cost of bankruptcy and credit losses is charged to those firms that pay their bills in that such losses are added into the cost of doing business and are thus taken account of in the establishing of resale prices. It may be that goods will be no higher next year than they were last and thus the cost of credit losses is not seen. However, no one can tell that the cost of goods would not have been less next year had last year's losses been less.

Cost of Service

This is true, too, of the cost of service. Pick-ups, rush deliveries, telegrams and long distance telephone calls all help the mounting cost of service and

are reflected in the price of merchandise. The contractor-dealer can himself help to reduce the cost of his own goods by the mere expedient of applying to his business the simple process of an established routine in purchasing. One of the large jobbing houses on the Pacific Coast reports that a high percentage of its sales is less than \$25 on one order and that on such orders they actually lose money. The natural result of this situation is that the man who buys more than that amount of goods at one time is helping to pay the losses on the volume of small orders. The answer is not to increase the number of small orders but instead to order systematically so that materials may be assembled in larger groups and the service cost thereby reduced. The small orders are largely due to carelessness and oversight. By ordering at stated times in the month and by keeping a want list, the business of purchasing, stock keeping, accounting, handling, drayage and many other items, will be greatly simplified. To order always on the twenty-fifth of the month, for example, for shipment on the first of the following month, allows the jobber to gather the various items together, to fill in any items on which he may be short, to ship in fewer packages thus saving freight charges as well as drayage costs, and saves on many of these costs on the receiving end.

Why Contractor-Dealer Needs Help

It is perhaps true that no other branch of the industry requires so much assistance in the conduct of its business as does the contractor-dealer. When one considers what has been said above relative to the establishment of this type of firm it is not difficult to understand why this is so. The need for assistance having been established, it becomes incumbent upon the jobber and manufacturer, as well as upon his many representatives, to bend every effort to strengthen the weak member. Perhaps some form of education is most needed although it may not be pleasant to hear the need called "education." We all like to think we know it all.

The reasons why the contractor-dealer particularly needs more help than other branches of the electrical industry are fundamental. In the first place the contractor-dealer is frequently a man who is an excellent mechanic but who has had little other preparation for a business career. He has been led to enter business for himself by the success and prosperity of others in his line and by a laudable desire to better himself. Frequently his action in becoming a master workman instead of a journeyman is commendable and justified. More frequently, perhaps, he is committing a grave error. This latter is very apt to be the case when he has been urged to enter a field already well covered. Unfortunately this has too often occurred. Many jobbers who were not getting as much business as they felt entitled to in a certain town have looked over the list of potentially eligible men elsewhere who were either dissatisfied with their existing position, working conditions or location and have sponsored their entrance into the contracting and merchandising field in the

city where sales volume was unsatisfactory. This has been done on the theory that the jobbers' volume from that city would show an increase. Circumstances have too often proved, however, that the advent of a new firm did not increase the gross volume of the community but did result in more finely dividing the existing business. Then has often followed a long period of price cutting, unethical tactics, hard feelings, delayed settlement of bills, impaired credits, bankruptcy and general disrepute for the electrical business generally. This has happened so many times that it is to be wondered at that the lesson has not been more generally learned that it is unwise to foster men into business who have not been properly trained in the fundamentals of business procedure. The importance of accurate accounting and of making each transaction show a profit cannot be learned in a day and the failure of many contractor-dealers can be traced directly to their lack of understanding of the need for these two essentials.

Business Training Essential Factor

An important thing, then, in connection with improving conditions and stabilizing the contractor-dealer structure is for the jobber and manufacturer to recognize the need for more men who are trained in business procedure rather than for more men. A wireman may make a good business man—in time—but the chances are that he will always be better off socially and economically in his chosen sphere and that the function of merchant will be better performed by one who has had training in the business of merchandising but who may have to start at the beginning to learn electricity. The economics of business procedure are fairly constant, regardless of the kind of merchandise handled, and one who has had experience in merchandising has a much better chance of being successful in the selling of electrical devices and service than has one who knows little of sales management. The need, therefore, seems to be for the entry into this business of those who are trained to exact a legitimate profit in return for their wares and their services. This seems to be particularly true because of the fact that so many of the contractor-dealers, both past and present, have apparently persistently refused to heed the warning that has been so often sounded and are still trying to proceed without regard for the financial side of business. A banker never figures to lose on a transaction or to do business at cost, hoping to make up the deficit on "extras." It seems queer that this lesson has not yet come home to the electrical contractor-dealer and that he has not yet learned to do business at a profit, only.

Basis for Future Success

The future success of this business seems, then, to be predicated on a better understanding and practice of merchandising principles and on a better standard of business procedure together with a more human relationship existing between competitors. To that end all of us in the electrical industry must work together for the common good.

JOBBER, DEALER AND SALES AGENT



Building Extra Profits With Non-Electrical Lines S. & H. Service Electric Company Uses Sidelines of Colored Glassware and Gas Appliances as "Leaders"

The answer to the problem of what the electrical dealer should do to supplement the narrow margin of profit on electrical goods is to carry other types of stock as a side line, according to R. E. Heerman of the S. & H. Service Electric Company, Alhambra, Calif. Mr. Heerman's own business includes both his retail shop on the main street of Alhambra and an electrical contracting business which covers a large field in the thickly populated territory in the vicinity of Los Angeles.

In the fall of last year, he determined to extend the scope of his stock and added a line of gas appliances. Later he experimented with fancy glassware, flower holders and other items of household interest. Gas equipment is a particularly satisfactory line for the electrical merchant, according to Mr. Heerman. The dealer is familiar with the problem of merchandising in a similar field, and finds no difficulty in transferring his efforts to the allied line. In fact, he states, gas appliance manufacturers have come to look upon electrical dealers as particularly desirable agents for their wares, and will favor this outlet over others in the same community, in many cases granting an exclusive agency in the face of other applicants.

This, Mr. Heerman feels, is because the electrical dealer has had, as a rule, a difficult time to succeed in his own line, and if he has made good can be looked upon as a merchandiser of the first class. This means that he will not merely place the goods on display and sell to such as come into the store, but that he will put an effort into the making of sales and thoroughly cover his community. In return, the margin on gas appliances is considerably higher than the usual run of electrical equipment, and it does not require servicing. He points out that the gas range, once connected, is never heard from again, except as its owner wishes to commend it—a fact which means a great saving when the total costs of doing business are figured.

Another line which makes a most excellent window feature is the less expensive type of colored glassware. Experience over the Christmas season brought him to the conclusion that the more expensive ware attracted fewer people to his shop, and in every way brought less satisfaction. A few well selected items, however, which will add a decorative touch to the window and counter and which can be sold at attractively low prices, will pay well in

themselves, and will bring many people into the store, thus adding to the other trade. As an example of what can be done in this respect, Mr. Heerman cites a green fruit bowl which he bought in some quantity and sold at 100 per cent gross profit. Even this figure, which, after the deduction of overhead costs, still brought in a greater proportional return than his regular stock, was greatly lower than the price at which the bowl was sold in department stores and home furnishing stores in Los Angeles. Large numbers of people were attracted by the advantageous price, and came in to make the purchase after looking elsewhere.

The store which occupies a downtown location must be assured of an active turnover. Rents are high and must be met by a correspondingly large volume of business. Obviously a diversity in the stock handled is an aid in bringing the customer more frequently into the store and hence in increasing sales. It

would, of course, be no advantage to handle a line of goods unallied with the electrical stock, which would require a division of interest, but gas appliances and household ware, in Mr. Heerman's opinion, meet the need without requiring an undue additional effort.

The result of the experiment has been not only to add a profitable business to that already done by the store, but very largely to increase the sales of electrical goods, owing to the greater store "traffic"—that is to say, the greater number of people exposed to sales temptation by being brought within sight of counter and shelf displays, not to mention the tactful sales argument of the proprietor.

Since the Christmas period of last year, a large part of the firm's advertising has been devoted to familiarizing the public with the fact that household equipment other than electrical is carried by the S. & H. Service Electric Company. Besides a very attractive business in the new lines handled, Mr. Heerman has found a marked increase in his electrical trade, which has this year set a higher record than at any other previous period.



The retail establishment of the S. & H. Service Electric Company, Alhambra, Calif.

KRIS KRINGLE KNICKED

By Joe Osier

Dear Santa Claus:

As perhaps you know, Bill Shakespeare, that celebrated catch-as-catch-can word wrestler, in an idle moment once said: "There is a tide in the affairs of men which, taken at the flood, leads on to fortune; omitted, all the voyage of their life is bound in shallows and in miseries." And—

Because I believe this saying to be the truth and nothing else but—

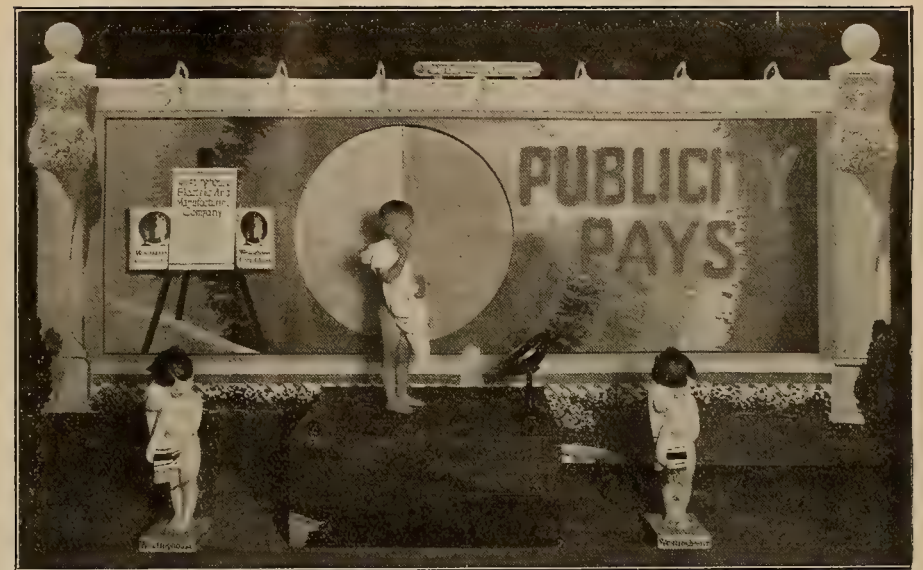


The business of knicking Santy!

I intend to take advantage of this outgoing Holiday tide and do my Christmas shopping early.

So here are my modest wishes, dear Kris:

During the coming year, I want you to bring me plenty of volume, good prices, ample stock which can be easily



The Westinghouse Electric & Manufacturing Company took first prize at one of the Seattle Advertising Club's contests with this animated Cozy Glow heater advertisement. Twelve manufacturing, wholesale and retail firms competed in the contest. The part of the "Cozy Glow Kid" was taken by a 4-year-old boy.

replenished and sufficient competition to keep my conscience clear.

I want you to bring me honest, hard-working, loyal employees—the sort of employees who will be interested in my business and their own future—employees who will be wide awake for a full eight-hour shift and who will tell time by the sun and not by the clock.

Also, Santa, bring me up-to-date customers—folks who have plenty of pelf and who will not be satisfied with anything less than the best. Bring buyers who buy and send those who are looking for check figures elsewhere.

And, while you are distributing your largess, bring me a fresh stock of determination—the will to hang tight when the sledding is hard. Bring me an extra large supply while you are bringing, because, daily, I am forced to use it when called into conference with "other bidders were" who have been asked to

prune here and pare there, cutting out their legitimate profit during the operation. I want the will to say "no," "nix," "not on your life," when jobs to be secured must be purchased outright.

One more request, Kris, and I am through. Renew my battery of ambition—charge it to its utmost capacity—fill it to overflowing because, during the past year, it has run down until it will hardly turn me over.

Give me ambition to buy at the right time, sell at the right time, at a profit, and to continue the long march, onward and upward to the heights desired by all men of the industry.

These boons I ask in the name of the boys in the business who have carried the light thus far.

Yours fraternally, hopefully and electrically,

I. NEVERQUIT.

Electric Truck Goes to National Section Committee Meeting

A light electric delivery wagon was used by C. G. Scott, C. D. Monteith and R. C. Griffin, to go to San Rafael, Calif., to attend the Transportation Committee meeting. The trip was made by way of the Golden Gate Ferry, leaving at 9:30 a.m. The trip to San Rafael was made over the Corte Madera hill in good time, arriving at the Northwestern Pacific station at 10:55, which was five minutes ahead of the train which made connection with the boat leaving San Francisco at 9:45 a.m.

The round trip showed a total distance of 33.3 miles. The amount of current used was 72.5 amp. hours, or an input for charging 11.6 kw-hr. The cost per mile, assuming 2 cents per kw-hr., would therefore be 0.7 cent. Gasoline cost, assuming 15 mi. per gallon, would be 1.2 cents, or an increase of 71 per cent.



In an unique float, portraying clothes washing methods from the beginning to the present time, the Idaho Power Company, Boise, Idaho, depicted the part played by electricity in the progress recorded in this most necessary housekeeping duty. The float appeared in the Pageant of Progress Parade, in Boise. The accompanying picture of the float shows that the three principal methods of washing clothes end with the method using the modern electric washing machine, and the banner attached tells the electrical story in a few words.

Maydwell & Hartzell, Inc., has been appointed sales agent in northern California and the Northwest for the Pacific Wire Rope Company, Los Angeles, Calif.

Putting Better Illumination in Colorado Kitchens

Public Service Company of Colorado Places 9,018 Kitchen Units, Thereby Greatly Increasing Operating Revenue

Nine thousand and eighteen kitchen lighting units were sold in thirty days. A saturation in various communities ranging from 47.5 per cent to 8 per cent was obtained.

In some towns more units were sold by general employees than by representatives of the commercial department.

Sales of 600 convenience outlets were made.

An immediate stimulation of interest in better home lighting, starting with the kitchen, was secured.

These are some of the outstanding features of the recent kitchen lighting unit campaign staged by the Public Service Company of Colorado in Denver as well as in northern Colorado towns and Cheyenne, Wyo. To the com-

The holders were designed for the use of 150-watt daylight lamps, and included a reflector baffle-plate. They were finished in white enamel and were so designed that a canopy switch could be included when necessary. White enamel finish was used on the units.

In Denver and the larger cities of the western division the assistance of local contractors was employed in installing the units, while in the smaller towns the company made the installations with its own employees.

The units were sold, installed, for \$6, payable at the rate of 50 cents a month with the light bill, and were installed on 30 days' free trial. No extra charge was made where a pull chain switch was required; in fact, when the commercial representative surveyed the prospect's kitchen, the type of holder required was noted, and the customer was not confused with talk about different type holders and switches.

Newspaper advertising was used in all the towns on the system. The initial advertising appeared in the Denver papers a week in advance of the opening, with a notation that the campaign was applicable to all the towns on the system. Broadside were mailed to all customers according to a schedule which would insure their delivery to a customer not over a day or two in advance of a call by a representative.

Stickers with perforated return postal cards were also attached to the monthly service bill of each customer, and a splendid response was noted from this activity, according to George W. Bixler, publicity director of the company in Denver. A large number of customers asked for a trial installation of the unit through this medium before the representative had time to make a call on them.

Window displays were arranged at each sales office, the dominant feature being the contrast between a modern and improperly lighted kitchen. Flashers were employed in several cases to show the difference in the lighting.

Several "booster" meetings were held just prior to the opening of the campaign, one in Denver and the other at Fort Collins, the most centrally located point for the northern Colorado employees. At these meetings the general features of the campaign were outlined, announcements were made of campaign and special prizes, and indi-

vidual sales quotas were established. A generous sprinkling of "pep" talks were made by company officials and representatives of the glass and lamp company whose products were used in the campaign.

There was not one of the employees at Fort Collins who did not sell at least one unit. Virgil Kinnison, in charge of arc lamps in that city, after regular working hours sold 218 units. A. B. Byron, a meter reader, sold 65, while W. I. Thomas, storekeeper of the company in that city, placed 54 units with customers of the company.

Among the commercial representatives, M. G. Wrigley of Boulder led the field with a total of 536 units, although H. W. Wood and V. H. Cable exceeded him in the percentage of sales to domestic customers. F. O. Ingraham of the Denver new business staff won first prize in that city with a total of 406 units. F. L. Farrow was second with 394, and George Hay was a close third with 393 units.

The executives under whose direct supervision the campaign was staged were: Denver division—R. G. Gentry, commercial manager, and John Miller, superintendent of the domestic electric division; western division—E. B. Ball,

Is Your Kitchen Up-to-Date? Is It Daylighted?



▲ A new idea in kitchen lighting has been introduced which brings into your kitchen at night time the bright and even light of the noon day.

The Daylight Kitchen Unit

▲ A kitchen fixture that drives away shadows, enables you to work easily and pleasantly in any part of the room without straining your eyes. It has been called artificial daylight, because it has no glare—neither has it strong shadows to interfere with your work.

As a Special Introductory Offer

▲ We will install the Daylight Kitchen Unit in your kitchen on 30 Days' Free Trial. If you are satisfied with the light and want to keep it, you can buy it for only 50 cents a month—until you have paid \$6.

▲ If you do not wish to keep it after the 30 days' free trial—we will remove the fixture at our expense.

▲ This same offer is effective not only in Denver, but also in—
Boulder Louisville Loveland Windsor
Lafayette Berthoud Fort Collins Cheyenne

Call Main 4000

Public Service Company
of Colorado

Four-column advertisements of this character called attention to the special offer.

pany it represents the sale of nearly \$60,000 worth of electrical merchandise which it is estimated will return to the company an increase of over \$80,000 in operating revenue during the next twelve months.

According to Thomas F. Kennedy, general commercial manager of the Do-herty companies, this campaign was the most successful ever staged by the commercial department of any of its subsidiaries, and the results obtained in the towns on the western division of the company establishes a new record, being the largest percentage of sales per domestic customer yet attained by any new business department of the company with kitchen units.

Holders for the units were manufactured in Denver according to specifications designed by Clarence Keeler, production manager and head of the fixture department. Three local fixture and spinning works produced the holders on schedule, and the glassware was not attached until the hanging of the unit in the home.

"Daylight" your kitchen

**The whole Family
Enjoys the kitchen-NOW!**

THE bright, well-diffused light of this new Kitchen Unit lures the man of the house kitchenwards with his newspaper reading. Primarily, of course, the Kitchen Unit makes your kitchen a model of efficiency, enabling the housewife to see even into the depths of the oven.

SPECIAL OFFER! 30 Days' free trial on your new fixture. We'll not ask for a cent on your part. We will install the Daylight Kitchen Unit free of charge. After 30 days free trial, if you wish to keep it, we will remove it at our expense. If you do not wish to keep it, we will remove it at our expense. This same offer is effective not only in Denver, but also in Boulder, Lafayette, Louisville, Berthoud, Loveland, Fort Collins, Windsor and Cheyenne.

Call Main 4000 and ask for a demonstrator to call upon you.

Public Service Company
OF COLORADO

Men were also appealed to in the newspaper announcements of the campaign.

commercial manager, and G. C. Brierly, assistant commercial manager.

Interesting conclusions are derived from the comparative sales units in the various communities served by the company. Most striking is the fact that in the smaller towns a larger percentage of domestic customers was sold than in the bigger cities. Although 5,502 units were sold in Denver alone, this figure is

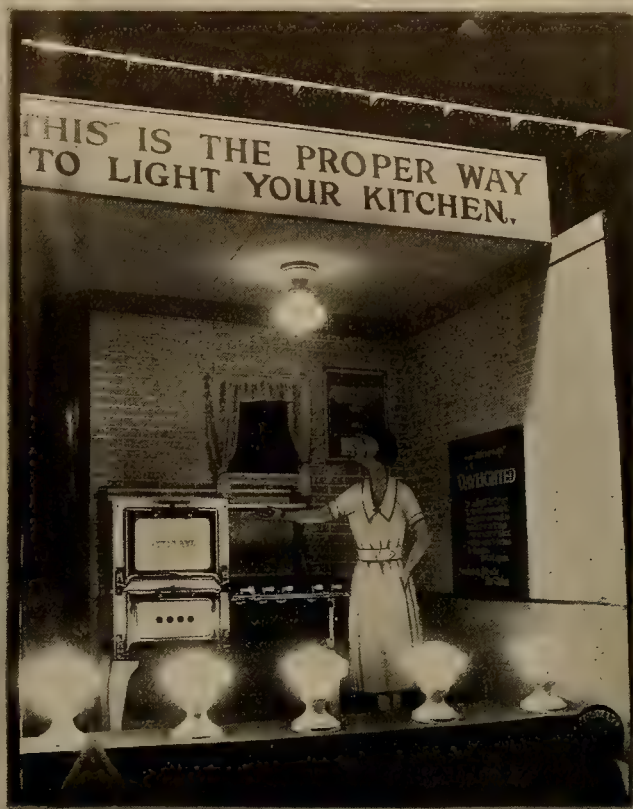
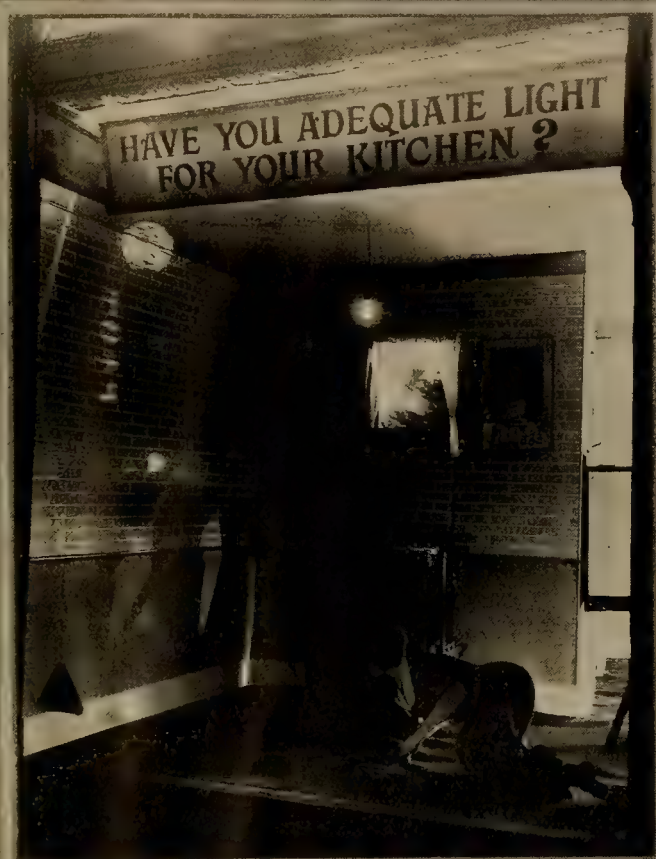
Table I

Town	Number of Domestic Customers	Number of Units Sold	Percentage of Domestic Customers Sold
Lafayette	1,018	483	47.5
Fort Collins	2,532	1,141	45.1
Boulder	3,192	863	27.0
Loveland	1,613	384	23.8
Cheyenne	3,194	572	17.9
Windsor	472	72	16.3
Total	11,976	3,516	29.3

vidual sales quotas were established. A generous sprinkling of "pep" talks were made by company officials and representatives of the glass and lamp company whose products were used in the campaign.

There was not one of the employees at Fort Collins who did not sell at least

about 8 per cent of the total customers, while in Lafayette, Colo., with a large population of foreigners and a poorer class of people, 47.5 per cent of the customers signed up for kitchen units. Figures on total sales made in the various offices of the western division of the company are shown in Table I.



WINDOW displays used by the Public Service Company of Colorado to attract attention to the kitchen lighting campaign that was conducted recently. The displays shown at the upper left and right backed up each other at right angles and were used to illustrate bad and good light respectively. The general display shown in the lower picture was used to call attention to the unit that was being featured in the special 30-day campaign.



INDUSTRIAL NEWS



New Long Beach Steam Plant Is Put Into Service

Adding 35,000 kw. to the capacity of the Southern California Edison Company system, the first unit of the 70,000-kva. addition to the Long Beach steam plant went on the lines of that company at 7 a.m. Dec. 3.

The completion of this generating unit is the culminating point of the effort made this year by the Southern California Edison Company to provide ample power facilities to meet the rapidly increasing demands for service in the territory served. These demands were substantially augmented due to the dry season of the past year. A second unit of the same size is being installed and will be ready for operation in a few weeks.

According to G. C. Ward, vice-president of the company, these units are the largest and most efficient on the Pacific Coast. With the completion of the second unit, the original Long Beach steam plant and the new plant together will have a combined capacity of 148,750 kva. The plants will be consolidated to form the largest steam generating station west of the Mississippi River.

The completion of the Long Beach plant, together with the addition of 41,000 kva. to the Big Creek hydroelectric development now under construction, will bring the total generating capacity of the Southern California Edison Company up to 500,000 kva. of steam and water power.

Originally planned for completion in fourteen months, work on the Long Beach plant was rushed on an emergency schedule with the result that this first unit was brought into service eleven months after excavation was started. In doing this there was included a record-breaking transcontinental shipment consisting of twenty-two freight cars which made the trip from Schenectady, N. Y., to Long Beach in eight days.

Every modern device for efficiency and economy in steam generation has been used in the new plant, with the result that it will produce 350 kw-hr. per barrel of oil in comparison with 225 kw-hr. per barrel in the original Long Beach plant, which at the time of its construction received wide publicity for its great efficiency.

Great Western Exercises Option for San Joaquin Purchase

As foreshadowed in the Dec. 1, 1924, issue of the Journal of Electricity, the deal merging the Great Western Power Company of San Francisco and the San Joaquin Light & Power Corporation of Fresno was completed in New York Dec. 2 through the purchase of the majority of common and preferred stock

in the latter utility by the Western Power Corporation of New Jersey, holding company for the San Francisco company. The purchase included the Midland Counties Public Service Corporation and the Fresno City Water Company, subsidiaries of the San Joaquin. The stock purchased was owned by W. G. Kerckhoff, president, and A. C. Balch, vice-president, of the San Joaquin, and their associates. The deal marks the retirement of this group from the hydroelectric field with which they have been associated since 1896.

Definite confirmation of the development program announced in the previous issue as hinging on the merger was contained in a statement by Guy C. Earl, president of the Great Western. This includes the construction of a 220-kv. tie-line between Sacramento and Fresno and the raising of Big Meadows dam at Lake Almanor 45 ft.

The extent of the combined systems of the two utilities is given in a statement issued by Mr. Earl which shows that 3,300 employees with an annual payroll of \$5,000,000 will be required to operate the property. The transmission lines cover an area of approximately 50,000 sq. mi. in 24 counties having a population of nearly 2,225,000. Over 130,000 consumers with a connected load of 800,000 hp. are served by the two systems.

Rumors to the effect that some of the large Eastern holding companies are behind the merger have not been confirmed to date.

Los Angeles Gas and Electric Steam Plant Progressing.—Work on the new Seal Beach steam plant of the Los Angeles Gas & Electric Corporation is progressing rapidly, and practically all auxiliary machinery has arrived on the job. The generator also has been shipped from the Westinghouse Electric & Manufacturing Company factory and should soon be on the grounds. Two of the B. & W. 2,545-hp. boiler drums have been set in place, and the building has been housed in on all sides. Practically all orders have been let for the material necessary for the completion of the plant.

Change Made in Edison Organization.—E. R. Stauffacher, H. E. Barden, G. H. Whitney, C. H. Hagey and F. E. Chaffee, comprising the protection engineering department of the Southern California Edison Company, have been transferred to the operating department to carry on protection work. L. F. Hunt and L. P. DelSasso will remain with J. A. Lighthipe, chief electrical engineer, to carry on experimental and development work.

Cutler Site to Be Developed by Utah Utility Company

The application of the Utah Power & Light Company for 2,500 sec.-ft. and 75,000 acre-ft. storage from the unappropriated waters of the Bear River has been approved by the state engineer of Utah. This means that work will begin in the very near future on the construction of a hydroelectric power plant by that company on what is known as the Cutler site, on the Bear River, in Box Elder County, Utah. The plant will consist of two units, each with a capacity of 15,000 kw., making the total installed generating capacity 30,000 kw. When the plant is operating at capacity about 3,500 sec.-ft. of water will pass through the turbines under a head of 128 ft.

The dam will be located a short distance above the plant. It will be of cement concrete construction, of the combination gravity and arch type. The crest of the dam will have a maximum height of 110 ft. above bedrock. The length of the dam over all will be about 500 ft.

This new plant will be the largest hydroelectric plant in the State of Utah, and will be second in size on the company's system to the Grace, Idaho, plant on the Bear River, of 44,000-kw. installed capacity.

The construction program in the building of this plant and dam involves an expenditure of about \$5,500,000 and the employment of approximately 1,000 men for a period of two years. It is expected that actual construction work will be under way by March 1, 1925.

American Power & Light Company Acquires Arizona Utility

Control of the Central Arizona Light & Power Company, Phoenix, Ariz., serving that city and adjacent territory, has been acquired by the American Power & Light Company, New York. The latter company has recently bought additional properties in Florida and extended its interests in Minnesota and Texas through the acquisition of other properties by the Minnesota Utilities Company, the Texas Power & Light Company and the Texas Public Utilities Company.

Through its subsidiaries, the American Power & Light Company now serves about 440 communities in Oregon, Washington, Idaho, Arizona, Texas, Kansas, Nebraska, Iowa, Minnesota, Wisconsin and Florida. Among the larger cities served by the operating companies are Portland, Ore., Walla Walla, Wash., Lewiston, Idaho, Phoenix, Ariz., Fort Worth, El Paso, Galveston and Waco, Texas.

Pit No. 3 Bore Holed Through and Ready for Lining

Completion of the bore of the 20,981-ft. tunnel at the Pit No. 3 development of the Pacific Gas and Electric Company marks an important step in this project. The tunnel was started in August, 1923, and comprises a passageway of approximately 23-ft. diameter in the rough, and will be 19 ft. in diameter when completed with its lining of concrete. Two adits sunk in at convenient points provided a total of six working headings, at which 250 men were kept busy, working in 8-hour shifts. Three compressed air shovels of special design were used in this work. A dam 125 ft. high and 400 ft. long will divert the waters of the Pit River through this aqueduct and five miles down the canyon to the power plant, where a head of approximately 450 feet will be realized. To date no concrete has been placed in the tunnel, but crews will be kept busy all winter placing this lining. The plant itself is about 50 per cent complete, and the entire job is expected to be completed during July, 1925.

The time and cost of the job to date is running well under estimates prepared before the work was started. The cost of the work up to Sept. 25 was \$1,038,000, while the estimated total cost of the completed tunnel is \$3,500,000.

Baker River Line Construction Partly Completed

Recent completion by Stone & Webster, Inc., of the 110,000-volt transmission line from Everett to Sedro-Wooley, Wash., a distance of about 45 mi., marks a step in the completion of the Baker River development of the Puget Sound Power & Light Company, Seattle, Wash. The line has been put into service temporarily at 60,000 volts, to improve conditions in the district, and work on the 25-mile section of 60,000-volt line from Sedro-Wooley north to Bellingham has been started. W. D. Shannon, general superintendent of Stone & Webster, Inc., Seattle, is in charge of the work.

These two lines, radiating from the new Sedro-Wooley substation, will be connected to the Baker River plant near Concrete, by a 110,000-volt line to be built next year.

Utility Information Committee Forms Plans for 1925

The public service institutions of Colorado, New Mexico and Wyoming on the first of December launched plans through which they intend to double the production of public good will in the territory served by them. Operating chiefly through the Rocky Mountain Committee on Public Utility Information, utilities in the Mountain states expect to obtain twice as big results as they did in 1924, which was the most successful year since systematic public good will building efforts were started three years ago.

At the annual meeting and election of the Rocky Mountain committee held in Denver, Colo., Dec. 1, W. C. Sterne was re-elected chairman, for the third successive year. Mr. Sterne is the head of a number of electric utilities operating in towns near Denver and in various mining districts. His re-election was in recognition of the remarkable manner

in which he has held together the large membership of the Rocky Mountain committee, which includes the more progressive electric, street railway, gas and telephone executives of the three states within its jurisdiction.

V. L. Board, general superintendent of the Public Service Company of Colorado, was re-elected secretary-treasurer of the committee for the third successive time, while R. M. Morris, general commercial manager of the Mountain States Telephone & Telegraph Company, Denver, was re-elected vice-chairman for the second time.

The Rocky Mountain committee has met with signal success in the prosecution of its activities in the universities, colleges, high and grade schools. Every university and college in Colorado, without an exception, is regularly taking from three to twelve utility subjects, the talks being made by committee members. Regular lectures are also being given in the high schools, more than sixty such talks having been presented during the past year.

Recently, faculty members from every university and college in Colorado met with members of the committee at a joint conference in Denver, at which the work for the winter terms was outlined. It is planned to extend the committee's activities to the universities and colleges in New Mexico and Wyoming during the winter.

The Rocky Mountain committee also is conducting classes in public speaking. Employees of the Denver utilities meet once a week, and a critic and expert in public speaking is in charge. From 10 to 50 embryo public speakers attend each session.

Newspaper advertising is playing an important part in winning public good will and understanding of utility problems in Colorado, New Mexico and Wyoming. Thousands of inches of display advertising are used. It is understood that a higher percentage of the utilities in this region is making use of newspaper advertising than in any other part of the country.

On Dec. 18 there will be a joint conference of utility men in Denver. Various questions of vital interest to the utility industry as a whole will be discussed and plans perfected for greater cooperation with the Rocky Mountain committee.

110,000-Volt Underground Cable Subjected to Tests

Supplementing laboratory and factory tests on high-voltage cable, a field test on a commercial length operating at 110,000 volts is being made by the General Electric Company. For this field test a 200-ft. length of single conductor cable is connected to the system of the Adirondack Power & Light Corporation at its North Albany station, Albany, N. Y.

The cable is connected through a separate oil switch outside of the lightning arresters, and is therefore subject to all of the surges, overvoltage stresses, etc., which might occur in the system proper. The length has been under test for more than five weeks and no trouble has developed.

This is the highest voltage at which a lead-sheathed cable has been operated in this country. The nearest approach is the 66,000-volt cable used by the Cleveland Electric Illuminating Company.

Basins of Columbia and Salt Lake Basis of Water Report

The United States Geological Survey has issued Water-Supply Paper 514, "Surface Water Supply of Lower Columbia River and Pacific Slope Drainage Basins in Oregon, 1919-1920." This is Part XII, and is one of a series of fourteen reports presenting results of measurements of flow made on streams in the United States during the years ended Sept. 30, 1919 and 1920, and was prepared in cooperation with the States of Oregon and Washington. The book contains numerous tables showing the daily discharge and monthly discharge and run-off of the Columbia River and its tributaries and of the streams between the Columbia River and the Klamath River. It is fully indexed.

The Geological Survey has also issued Water-Supply Paper 517, "Water Powers of the Great Salt Lake Basin," by Ralf R. Woolley, with an introduction by Nathan C. Grover. It covers in detail geography, geology and physiography of the Great Salt Lake Basin; climate; lake levels; general features of the various river basins; stream flow; reservoirs and reservoir sites; developed and undeveloped water power; water rights and appropriations; irrigation; market conditions; relation of the federal government to the development of water power. A map of the eastern portion of the Great Salt Lake Basin showing the development of water power is carried as a supplement.

Paper 514 may be procured for 25 cents and 517 for 30 cents from the Superintendent of Documents, Government Printing Office, Washington, D. C.

New Unit Installed in Montana Hydroelectric Plant

The Mountain States Power Company has installed a new hydroelectric unit in its plant at Big Fork, Mont. The new unit is an S. Morgan Smith vertical-tube waterwheel direct-connected to an Allis-Chalmers 2,300-volt, 60-cycle, 3-phase, 1,750-kw. generator. Moloney transformers to step the voltage up to 33,000 volts have been installed in the plant.

Prior to the bringing in of the new unit, the plant, located on the Big Fork River, contained two units, one of 500 kw. and the other of 750 kw. capacity. This plant serves the Kalispell, Mont., district of the Mountain States Power Company.

Great Western Announces Scope of 1924 Extensions.—Routine extensions and installations made by the Great Western Power Company during 1924 have cost that company nearly \$1,500,000, according to J. B. Black, vice-president and general manager of the company. The more important items included in the year's work are: The building of 4½ miles of 4-kv. lines to care for pumping and lighting load in District 307, near Lisbon; the rebuilding of the Napa substation to care for increased street lighting; the completion of a new line to the works of the Henry Dalton Company of Oakland to serve a new 1,000-kva. metal-heating furnace being installed at that plant. Line extensions and substation additions are also planned for several districts adjacent to Sacramento.

Early Returns Indicate Success for Lighting Contest

Early returns from ten city headquarters in the Western states indicate that an average of 11.17 per cent of the school children in those cities that registered in the Better Home Lighting Contest, which was recently brought to a close, submitted essays. In these cities, picked to give a representative cross section of the Western states, 39,218 children registered in the contest, and 4,375 sent in answers. A total of 49,438 primers was distributed by various agencies—schools, banks, central station companies, electrical contractor-dealers—in order that the children might participate in the contest.

Approximate figures from four states show that over 14,000 essays were entered in the contest. Over 100,000 primers were distributed in these four states, 70,000 being distributed in California alone. The children sending in essays were 21.21 per cent of the total registration.

Figures from two county districts in California indicate that, due to the difficulty of reaching the students, the ratio between answers and eligibles is considerably lower than it is in the cities, the average being over 2 per cent. The proportion of essays to registrants averages 9.31 per cent. The average ratio between essays and registrants for the three groups is 16.85 per cent.

The results shown in the accompanying table do not give a complete history of the Better Home Lighting Contest. The figures, despite the fact that they are as accurate as can be secured at this date, do not cover the contest completely. Many small communities have not reported, and several chairmen in several of the larger cities have not been able to make reports on the outcome of the campaigns. The registration figures that have been compiled do not give the actual total of those

enrolled in the contest, due to the fact that in some communities, particularly in California, where 70,000 primers were placed in the children's hands, the contestants withheld their enrollment registration cards until the time that the primers and essays were submitted. This, of course, has lowered the number of registrants, as in most cases late registration cards have not been counted yet, and has raised the ratio between answers and registrants. A similar discrepancy may be noted in the number of essays received. In some localities the school authorities graded the primers and essays before submitting them to the local contest committees and in this way eliminated many that did not comply with all requirements of the contest. District chairmen believe that in some localities fully 50 per cent of the total number of answers submitted to the school authorities were thus rejected by the school heads. This, of course, saved time for the local judges, but reduced the total number of essays submitted.

In general, reports from those in charge of the Better Home Lighting Contest in the Western states indicate that the results have been highly satisfactory and that a great amount of educational work has been accomplished. By the participation of the school children in the contest, the attention of thousands has been drawn to the need for better lighting in the home.

Pacific Gas and Electric Company Applies for Revision of Resale Power Rates.—The Pacific Gas and Electric Company has applied to the California Railroad Commission for a revision of its schedule of rates for the sale of power for resale purposes. The company has stated that it has a deficit for the year 1924 in its operations under this particular schedule amounting to \$400,000.

Location	No. of registrants	No. of essays received	Primers sent out	Percentage of essays to eligibles	Percentage of essays to registrants
State					
California	36,000 ⁵	4,500 ⁶	70,000 ⁷		12.5 ⁹
Colorado, New Mexico and Wyoming	32,000	9,928	35,000	19 ⁶	31 ⁶
Total	68,000	14,428	105,000		
Average					21.21 ⁶
Cities					
Los Angeles, Calif. ¹	14,000 ⁶	581 ⁷	14,500	2.1	4
Salt Lake City, Utah ²	10,000 ⁶	4,000 ⁶	15,000 ⁶	15	40
Oakland, Calif. ¹	2,200 ⁵	1,060 ⁷	5,500	8.8	50 ¹⁰
Portland, Ore. ³	10,200	1,368	11,620	4.7	13.4
Spokane, Wash. ¹	400	119	300	1	30
San Diego, Calif. ¹	300	33	400	4	11
Yakima, Wash. ¹	1,100	485	1,100	21.2	44
Medford, Ore. ³	1,018	329	1,018	13.4	32.4
Total	39,218	4,375	49,438		
Average					11.17
Counties					
Los Angeles County	9,100 ⁶	700	9,000	2.8	7.7
Sacramento, Solano and Yolo Counties, Calif.	690 ⁶	221	2,000	1.5	32
Total	9,790	921	11,000		
Average					9.31

¹Covers one city only.

²Covers 35 cities.

³Covers 15 cities.

⁴Covers 26 cities.

⁵Covers 10 cities.

⁶Approximate figure.

⁷Many essays that were read by the school authorities were not turned in to the contest judges.

⁸Due to a misunderstanding of the rules, a large number of children did not send in registration cards prior to the time they submitted their essays. This accounts for the low registration.

⁹Due to the fact that in California many registration cards were submitted with the essays and have not been counted yet, this percentage is high. A more accurate figure would be one showing that 6.43 per cent of the 70,000 children receiving primers sent in answers.

¹⁰Although 50 per cent of the registered contestants submitted essays, due to low registration as explained in ⁸, completed work was received from 18.5 per cent of those who were given primers.

\$5,000,000 Valmont Steam Plant Placed in Operation

Completion of the first unit of the new Valmont steam plant of the Public Service Company of Colorado enabled the starting of this plant Nov. 30. This station is located about three miles east of Boulder, Colo., and is designed for an ultimate installation of five 20,000-kw. generators, only one of which is in service at the present time. The others will be added as needed.

The unit now in service is a 20,000-kw., 1,800-r.p.m., 13,000-volt Westinghouse generator direct connected to a 33,500-hp. impulse reaction Westinghouse turbine. Steam is supplied by a battery of four Bigelow-Hornsby 1,300-hp. boilers operating at 375-lb. pressure, 200 deg. superheat, and fired with pulverized fuel. A 110-ft. dam impounds the spring flood waters of South Boulder Creek, forming a reservoir of 9,792.86 acre-ft. capacity and 419.24 acres area for condenser cooling water.

A 24-mile, 110-kv. transmission line to Lacombe station in Denver forms the main artery from the plant, while an 8-mile, 110-kv. tie line to the Boulder Canyon hydro plant and a 44-kv. loop tie line to the Lafayette power house complete the tie-in of the new with the old. Brought to completion at the same time as the steam plant, the new Lacombe receiving station brings together for distribution the power generated both there and at the Boulder Canyon hydro plant. The capacity of this distributing center is 22,500 kw. at present and 90,000 kw. ultimate.

P.C.E.A. Technical Section to Hold Conclave Meeting

The first 1925 conclave meeting of the Technical Section of the P.C.E.A. will be held at the Hotel Fairmont, San Francisco, Jan. 7-9. All bureaus of the section will meet at this time.

The meetings of the bureaus will be held during the three days. Several of the bureaus have meetings scheduled for more than one day. The meeting of the executive committee will be held at 4 p.m. on Jan. 9. The general meeting will convene at 8 p.m. on Jan. 8.

The schedule of the bureau meetings is as follows:

	Wed. Jan. 7	Thurs. Jan. 8	Fri. Jan. 9
Hydraulic Power Bureau	10 am		
Underground Systems Bureau	10 am		
Meter Bureau	10 am	10 am	
Accident Prevention Bureau	10 am	10 am	
Overhead Systems Bureau	10 am	10 am	10 am
Apparatus Bureau		10 am	
Inductive Co-ordination Bureau			10 am
Prime Movers Bureau			10 am
Safety Rules Bureau			10 am
Executive Meeting			4 pm
General Meeting		8 pm	

Water Company May Develop Power From Siphon.—Utilization of a 200-ft. head in the new 32-in. siphon it has just completed, for hydroelectric generation, is contemplated by the Escondido Mutual Water Company. The company already has two small hydroelectric plants, one at Rincon, the other at Bear Valley, from which it derives power which it distributes to territory in the vicinity of Escondido, Calif. The new siphon cuts off three miles of canal between Lake Henshaw and Lake Wohlford. It is situated in Hell Hole Canyon, a few miles from Escondido.

Report on Skagit Cost Is Issued; Total Is \$13,089,766

According to figures recently made public by H. W. Carroll, chief accountant of the office of the city comptroller, Seattle, Wash., that city has expended or designated for expenditure, on the Skagit hydroelectric development, \$13,089,766. The figures show that for actual construction there has been spent \$11,131,896, or \$131,896 more than was expected when the \$11,000,000 bond issue was authorized to pay for the Gorge Creek unit. Other items, bringing the total past the \$13,000,000 mark, were charges by the City Light Department for bond interest and discount amortization to the sum of \$1,957,870, and certain pieces of construction transferred from that department.

The report calls attention to several items of cost, charged to the Gorge Creek construction, that will be retained and will prove useful in any future development. The largest of such items is the \$1,750,000 railway from Rockport to the Skagit Camp. Another is the right of way for the transmission line, costing about \$500,000. Camp supplies and equipment of a value of about \$100,000 will also be retained by the City Light Department.

Sale of Municipal Hydro Bonds Prohibited by Court

The city of Aberdeen, Wash., will not be allowed to proceed with the sale of its \$2,000,000 bond issue voted on Dec. 1, 1923, for the construction of a municipal hydroelectric plant on the Wynooche River in Grays Harbor County and for the financing of improvements to its water system, according to a recent Supreme Court decision. The ruling upheld the Grays Harbor County Court, which had declared the election void because it involved the financing of two projects from one bond issue.

The city proposed to construct a dam on the Wynooche River which would create what was to be known as the Weatherwax Basin. Water was to have been used from this basin for the operation of a hydroelectric plant and some of the water was to have been transferred to augment the flow of the Wishkah River, from which the city derives its municipal supply.

Action to enjoin the city from proceeding with the sale of the bonds was brought in the name of F. O. Dole, a citizen and taxpayer. He was successful in the low court and also in the Supreme Court. No information is available as to what course the city will now pursue.

Changes in Denver Regulations to Take Effect Jan. 1

New regulations by the electrical inspection department of the city of Denver, Colo., to be put in effect Jan. 1, 1925, are regarded by observers as of unusual interest. This interest is due to the fact that the changes are considered by many as the logical improvement of electrical installations in a city where the all-metal requirements have been in force for years.

The changes announced by C. F. Oehmler, head of the inspection department, concern the exclusive use of galvanized conduit, fittings and equipment, and it is understood that this regulation will apply to coverings of ordinary

motor-starting devices. An exception will be made in the case of motor housings or in other cases where separate grounds and clean connections are provided in the discretion of the inspectors.

Galvanized cabinets will also be required, and in all cases of concealed work flush type cabinets will be required. Safety type externally operated knife switches of all types will hereafter be required except in the case of those switches which are integral parts of switchboards. This regulation will apply to all classes of work, including distributing cabinets and switches in residences.

Mr. Oehmler has expressed himself in favor of the Red Seal standard of wiring which is being promoted throughout the country and has given his assurance to officials of the Electrical Cooperative League of Denver that he will lend his assistance in establishing the standard in Denver.

Coupeville, Wash., to Receive Better Service.—The Whidby Light & Power Company, Olympia, Wash., plans to supply the town of Coupeville, Wash., with light and power, if the rate and regulation schedules filed with the Washington Department of Public Works are accepted. The company will charge a rate of 20 cents per kw-hr. for all service except street lighting.

Preliminary Permit Granted for Elwha River Power Site

The Federal Power Commission has issued a preliminary permit to the Northwestern Power & Manufacturing Company of Port Angeles, Wash., for the construction of a power dam and hydroelectric plant on the Upper Elwha River, within the Olympic National Forest, according to advices received by R. L. Fromme, supervisor of the forest.

The plan of the company is to develop about 7,000 hp. at the Upper Elwha plant and then carry the water down the river in a concrete conduit a distance of about four miles to where it has another generating plant. The permit calls for the appropriation of 460 sec.-ft. of water. A considerable portion of energy developed at present is used in Bremerton, Wash., and vicinity.

Municipal Plant Taken Over by Oregon Company.—As a result of a special election at Scio, Ore., passing on the sale of its municipal plant and distributing system to the Mountain States Power Company, Albany, Ore., the city turned over these properties to the power company on Nov. 1, 1924. By a vote of 124 to 3, the electorate favored the sale at the agreed price of \$42,500 in cash plus certain street lighting concessions.

Ye Bidding to Ye Christmas feaste of Victual and of Soul

Ye feaste and faste throughout ye yeare,
Of whatsoever merit,
Mean little to ye Engyneere
Who hath noe time to spare it.

But when ye cheer of Xmas Day
Is burgeoned through ye lande,
Ye Engyneeres become a gay,
Albeit pious, bande.

They'll gather at ye meetynge guild,
Fulle copiously eatynge;
And then, content, with bellye filled,
Exchange theyre Xmas greetynge.

Ye robed choir will chant ye layes,
Ye fiddler whine ye tune,
And what ye gifted speaker sayes
Is lost in quiet swoone.

So come eache goodlye Engyneere;
Lay by yon slide-rule worne,
And marke with fellowship sincere
Ye daye The Childe was born.

~

Saturday, December 20, 1924
Luncheon at 1:00 p. m.

LOWELL REDFIELD'S CHOIRSTERS
RUDY SEIGER'S ORCHESTRA
A DISTINGUISHED SPEAKER

Engineers' Club
San Francisco

Card sent out by the Engineers' Club of San Francisco, inviting members to attend a Christmas luncheon to be held at the club Dec. 20.

Hetch Hetchy Mountain Division Work Temporarily Halted

Work was stopped in several mountain camps on the Hetch Hetchy water supply project of the city of San Francisco, Calif., on Dec. 8, and 500 men were laid off, as a result of the recent controversy over construction, referred to in *Journal of Electricity*, Dec. 1, 1924, p. 416. The two principal operations discontinued were all tunnel lining and the construction of the South Fork aqueduct crossing. The stop order issued by the acting mayor was nullified by an injunction secured by a taxpayer, as previously stated, and the court later ruled that the order was not binding upon the Board of Public Works. The latter body, however, had already passed a resolution pursuant to the acting mayor's order, and upon the auditor's showing that money remaining in the 1910 bond issue fund was insufficient for further work the resolution was allowed to stand even though it halted work considered highly important.

One result of the dispute has been the action taken by the Board of Supervisors in modifying the 1913 ordinance which gave the Board of Public Works, and through that body the city engineer, authority to let contracts, purchase supplies and, in general, to operate without restriction in carrying on the work. Under the modified ordinance the Board of Public Works must itemize its budget and get the approval of the supervisors in advance. Expenditures in excess of the budget may be made only by special authorization.

The supervisors have been endeavoring to find some financial plan whereby the fund, from which money for Hetch Hetchy construction must be drawn, can be supplied with the amount necessary to complete the work in the mountain division. The City attorney has stated that the charter prohibits borrowing money direct from the banks. Of several plans suggested, one proposed that the Spring Valley Water Company of San Francisco, which is to pay the city \$250,000 annually as interest on the construction cost of the bay crossing as long as this shall be used to bring in water from the Calaveras watershed, be asked to make an advance payment of four years' interest. As this issue goes to press, it is reported that the water company has agreed to the proposition, and work on the mountain division is expected to be resumed within a few days.

Edison Company to Hold Kitchen Unit Sales Campaign

A kitchen lighting unit sales campaign to cover the entire system of the Southern California Edison Company is scheduled to start Jan. 1, 1925. Preliminary to the announcement of the campaign to cover the entire system, the Edison company conducted a trial campaign in its Vernon, Calif., district.

In this territory, during a two weeks' campaign that was closed Dec. 1, a total of 580 units was sold. Average lamp sizes were increased 40 watts as a result of the installation of the units. The territory in which the trial campaign was conducted included the cities of Vernon, Huntington Park, Cudahy, Bell, Maywood and adjacent territory and has an approximate population of

100,000 with a total of 20,000 consumers on the Edison company lines.

In the Vernon district campaign, it was found that salesmen found 25 per cent of the people not at home. Ten per cent of those interviewed purchased the kitchen lighting units. The salesmen were well received, and indications are that better lighted kitchens will result in more light being used in other parts of the home.

The offer made by the company included the installation of the kitchen lighting unit without charge for a 15-day trial period. At the end of that time if the purchaser was not entirely satisfied with the unit, it was removed and the old fixture replaced. If the unit was kept the customer received a bill for 75 cents with the first lighting bill subsequent to installation and a bill for the same amount with each succeeding lighting bill until the total amount of \$6.75 was paid. Arrangements were made with local contractor-dealers to install the units as soon after the sale as possible.

The same general campaign plans will be used in the sales drive that will start the first of the year.

California Water and Power Act Cost Was \$145,668.41

The California Water and Power Act, defeated at the last election, cost proponents and opponents \$145,668.41, according to the expenditures reported to F. C. Jordan, secretary of state. Of this sum the opponents spent \$103,656.41 and the proponents reported spending \$42,012. It is reported that Rudolph Spreckels, one of the chief proponents, contributed about \$27,000 of the money spent to encourage passage of the act.

The itemized expenditures of the power companies are reported as follows: Southern California Edison Company, \$39,188.93; Pacific Gas and Electric Company, \$46,285.87; San Joaquin Light & Power Corporation, \$6,380.88; San Diego Consolidated Gas & Electric Company, \$5,464.08; Western States Gas & Electric Company, \$2,182.43; Southern Sierras Power Company, \$1,595.76; Midland Counties Public Service Corporation, \$1,306.12; Great Western Power Company, \$1,252.34.

Court Grants Loveland Right to Operate Municipal Plant

The right of the city of Loveland, Colo., to operate its recently constructed municipal light and power plant has been affirmed by the United States Court of Appeals. The decision sanctions that of the United States District Court which denied the appeal of the Franklin Trust Company of New York, bondholders of the Public Service Company of Colorado, to restrain the city from condemning the distributing system of the latter company.

The bondholding company claimed that its holdings would be impaired if the city were allowed the right to condemn the distributing system of the Public Service Company of Colorado. The utility company has been serving the city for some time, and its franchise has two years to run.

The municipal plant has just been completed at a cost of \$500,000. It has been announced that the plant will be put in operation Jan. 1, 1925.

N.E.L.A. Educational Courses Are Ready for Distribution

The National Electric Light Association has recently published a series of three educational courses in booklet form that are remarkable for the clearness with which the subjects are presented. The courses have been compiled and published under the direction of the Committee on Education of the Commercial Section and cover three subjects of special interest to central station employees. The courses presented are:

- 1—Lighting sales course.
- 2—Merchandise sales course.
- 3—Power sales course.

The student is first given the basic principles of central station work in a series of six lessons covering Part I of the course. Lesson 1 is Salesmanship, followed by (2) Public Relations, (3) Elements of Electricity, (4) Rates, and (5) Wiring for Light and Power.

Part II consists of a series of lessons dealing with the specific course being studied. Part II of the Lighting Sales Course is presented in seven lessons, each dealing with a separate phase of the application of light. Primarily, however, the student is given a discussion on the fundamentals, covering light sources, then measurements and elementary calculation. The remainder of the lessons covers successively Residence Lighting, Store Lighting, Office Lighting and Industrial Lighting and Outdoor Applications. The subjects are all covered in a complete and concise manner.

The committee deserves the utmost praise for the manner in which it has selected and edited this course. Although much of the material is reprint of manufacturers' data books and is not new, it is so arranged as to be continuous and complete. This course should prove of inestimable value to all those who desire to grasp the essentials of the subject.

Part II of the Merchandise Sales Course deals with Advertising, Merchandising, Electric Heating, Industrial Appliances and Selling Campaigns. The subjects are treated in a comprehensive way and the material should be helpful to every sales employee.

Part II of the Power Sales Course deals with Electric Motors, Motor Applications, Steam, Gas and Oil Engines and Industrial Heating. Illustrations, diagrams and curves add to the value of this course and make the various sections extremely valuable to all students and others interested in power sales.

The courses are obtainable on payment of the registration fees as follows: Merchandising Sales Course, \$12; Power Sales Course, \$6; Lighting Sales Course, \$6. All of the courses have been prepared under the direction of Fred R. Jenkins, chairman, Committee on Education, National Electric Light Association, 72 West Adams St., Chicago, Ill., to whom all inquiries should be directed.

Salt Lake City Contractor-Dealers Form New Organization.—The organization of contractor-dealers in Salt Lake City, Utah, which was formerly known as the Utah Association of Electragists, has been reorganized and is now known as the Salt Lake Electrical Contractors' and Dealers' Association. New officers

H. B. Kirkland Is to Supervise Red Seal Plan Campaign

H. B. Kirkland, vice-president of the American Wiremold Company and president of the Electrical League of Hartford, Conn., will join the headquarters staff of the Society for Electrical Development, Dec. 1. He will supervise the society's general activities affecting wiring and particularly "The Red Seal Plan to promote adequate wiring for convenient electrical service in the home."

Mr. Kirkland will co-ordinate the recommendations of the Red Seal advisory



H. B. KIRKLAND

committees, appointed by the various national associations, and will be available to assist national organizations in the development of other cooperative programs for the advancement of wiring standards.

His wide acquaintanceship will strengthen the society's intimate contacts throughout the industry and will further insure the proper consideration of the many diverse interests in cooperative work. On account of his long experience in the industry and his constructive work in the wiring field, he is admirably fitted to handle the national organization of the Red Seal campaign.

Additions Made to Los Angeles Distribution System

Construction of a new substation on Mateo Street in Los Angeles, Calif., has been started by the Los Angeles Bureau of Power and Light. The initial capacity of the substation is to be 10,000 kva. The station is being planned for an ultimate capacity of 50,000 kva. This substation will be built along standard designs which provide for the 33-kv. switching equipment on the upper floor, while the 4.4-kv. switches, regulators and feeders occupy the main floor. The building is of the T shape, unit type, and is well adapted for expansions to accommodate the growth of business.

Substations of a similar design have been completed within the last eight or nine months at Ninth and Figueroa Streets and at San Pedro. A synchronous condenser is installed in the San Pedro building and a motor-generator set is included in the Ninth and Figueroa equipment. All of these substations are fed from the city's 33-kv. lines over two or more lines from different points.

A 33-kv. loop and feeder circuit some 40 miles long has been completed in the San Fernando Valley district to feed various industries located there. A large part of the city's distribution system, including about half of the Hollywood district, has been cut over to 4.4-kv. operation and the remainder is expected to be completed by February, 1925. A new substation site has just been purchased at Thirtieth and San Pedro Streets.

Ogden Chapter of A.A.E. Resumes Weekly Meetings.—The weekly luncheons of the Ogden, Utah, Chapter of the American Association of Engineers, which were discontinued last spring, have been resumed.

Books and Bulletins

THEORY AND PRACTICE OF PUBLIC UTILITY VALUATION

By W. H. Maltbie. 201 pages. \$2.
Published by McGraw-Hill Book Company, Inc., New York, N. Y.

According to the author, who is a consultant on public utility valuation, rates and taxation, this book is intended to be a discussion of the principal points in the theory and practice of public utility valuation. The material is presented in such a way as to make it intelligible to the general public, and it is not intended that the book shall be a reference work for the valuation specialist. It represents the conclusions of an individual student of the subject, and in general no attempt is made to support the statements in the book with reference to recorded decisions.

The introduction outlines the relation of a corporation to the public service commission. The author's clarity of expression throughout the book is well illustrated by the following definitions used in discussing the fundamental principles of constructive regulation. He states:

1. "It is the duty of the commission to protect the consumer—to see that he is not charged an excessive price for the article which he buys or the service which is rendered him."

2. "It is the duty of the commission to protect the investor—to see that what he has devoted to the public service is not taken from him and that he is allowed to receive therefrom an adequate return."

The introduction is followed by chapters on Original Cost, Capitalization, and Market Values of Securities Outstanding, followed by five chapters devoted to the important subject of Cost to Reproduce New. Then follow chapters on Overhead Charges, and Working Capital, Intangible Values and Deductions from Gross Value. The important subject of Depreciation is allotted five chapters, and the book concludes with chapters on Present Value and The Rate of Return.

Throughout the book one can see that the author has exercised care in the presentation of each branch of the subject, using some concrete illustration wherever possible. As a result, a complicated subject involving business,

legal and engineering principles is presented in such a manner that the book is suitable for use as supplementary reading by engineering students as well as by those following the diversified interests of public utilities.

E. E. S.

ENGINEERING IN AMERICAN INDUSTRY

A reprint of a lecture delivered by Conrad Newton Lauer before Princeton University under the Cyrus Fogg Brackett Lectureship in Applied Engineering Technology. 94 pages; numerous illustrations. \$2.50. Published by McGraw-Hill Book Company, Inc., New York, N. Y.

This is "a review of the growth and development of manufacture in the United States and the contributions which engineering has made." Mr. Lauer starts with the year 1803, choosing that year "because the 120 years that have elapsed since then are less than the span of two biblical lifetimes of threescore years and ten." In other words, the time element in American development has been within an almost incredibly short period." He uses as an example a typical Virginia farmer in need of a plow and the difficulties and hardships attendant upon his acquiring it, such as undeveloped industrial progress, high cost of commodity, a primitive and ineffective product, lack of transportation, waste of time and lack of communication. Abstracts from three newspapers published in Richmond, Va., in December, 1803, give a resume of industrial conditions at that time. Mr. Lauer touches upon the invention of the steamboat, the telegraph and telephone and on the power situation, and draws attention to the contribution of civil, mechanical and electrical engineering to transportation, of mechanical and electrical engineering to power supply, and of engineering in general to communications.

Then follows a series of graphical maps to show the progressive development of American industry by states and by decades, commencing with 1849, together with brief historical data of each period. The book contains a large number of charts showing population centers, manufacturing centers, production output of American industries, production of various commodities, rubber imports, motor vehicle registration, railroad mileage, freight traffic, statistics on the power industry, gross revenue of the Post Office Department, U. S. exports and imports, and the growth of American collegiate education.

Comparison is made between the conditions surrounding the farmer of 1803 and those surrounding his grandson who, in 1923, wants a tractor plow. Engineering is found to have contributed, in general and among other ways, in the development and application of the physical mechanism of industry; in industrial administration; in distribution and marketing; in the economics and finance of industry; in the development of the industrial enterprise.

The illustrations are one of the most interesting features of the book, particularly the reproductions of old woodcuts such as the first locomotive and train of passenger cars ever run in the State of New York, the Philadelphia Water Works engine of 1800, a telephone exchange of 1879, quadruplex telegraphy in 1884, and electric traction in 1880.

E. J.

Meetings

Rocky Mountain Service Groups Are to Meet Dec. 18

The annual midwinter meeting, sponsored jointly by the Colorado Public Service Association and the Rocky Mountain division of the N.E.L.A., will be held at the Denver Athletic Club, Denver, Colo., Dec. 18, according to a report just received from O. A. Weller, secretary of both bodies. Attendance last year passed the hundred mark and proved so successful that arrangements are being made to care for even a larger gathering this year. Representatives from the utility companies in the states of Colorado, Wyoming and New Mexico will attend. A large number of department heads from the service companies in Denver also will be in attendance.

Entertainment has been provided by these companies and will take the form of a luncheon at noon, with Ernest Stenger, receiver of the Denver Tramway Company, as host; dinner at night with the Mountain States Telephone & Telegraph Company in its cafeteria, to

COMING EVENTS

Colorado Public Service Association—

Annual Midwinter Meeting—Denver, Colo.
Dec. 18, 1924

Rocky Mountain Division, National Electric Light Association—

Annual Midwinter Meeting—Denver, Colo.
Dec. 18, 1924

New Mexico Electrical Association—

Annual Convention—Albuquerque, N. M.
Feb. 16-18, 1925

be followed by a theater party arranged by Clare N. Stannard, vice-president and general manager of the Public Service Company of Colorado.

One of the features of the program will be the appearance of several representative high school boys to present the opinion of the younger generation on the service of the various utilities.

Committees appointed for the meeting are: General committee—W. P. Southard, chairman; C. A. Semrad and W. C. Sterne; program committee—J. E. Loiseau, chairman; R. B. Bonney, E. A. West, G. E. Lewis and O. A. Weller; arrangements committee—S. W. Bishop, chairman; A. C. Cornell, B. C. Wheatland and H. S. Sands.

San Diego County Possibilities Are Explained at Club

Farming and industrial possibilities of San Diego, Calif., were surveyed by members of the Electric Club of that city when two speakers, at recent consecutive meetings, brought facts and information to their attention in concise, well delivered and enthusiastic talks.

Farming received first consideration, when the farm equipment committee presented J. G. France, county farm adviser for San Diego. Mr. France presented a complete summary of the county's agricultural resources, stating that \$15,000,000 in wealth was brought

to the county this year by farm produce of the county. This, he pointed out, was the city's biggest industry, despite the prevailing idea that the county was not an agricultural community.

A. E. Holloway followed with a brief talk pointing out that California agriculture was more thoroughly developed electrically than in any other state and urged especially that pains be taken to educate the farmer to the real necessity for adequate, safe wiring and high-grade installations. Only by such means could he be guaranteed continuous service at the most economical figure to himself, he said.

H. Jackson, industrial secretary of the Chamber of Commerce, was the speaker at the Dec. 2 meeting of the club. He gave the club an idea of the work the chamber is carrying on to interest industry in San Diego.

Rocky Mountain League Elects Trustees and Officers

At the annual election of members of the board of trustees of the Rocky Mountain Electrical Cooperative League, held at Salt Lake City, Utah, Dec. 1, the following were elected to serve for the coming year:

Jobbers

J. A. Kahn, president Capital Electric Company.

C. B. Hawley, manager Inter-Mountain Electric Company.

J. M. Perlewitz, manager Salt Lake City branch, Western Electric Company.

W. J. Berryman, manager electrical department, Mine & Smelter Supply Company.

Contractor-Dealers

J. V. Buckle, manager Buckle Electric Company.

G. R. Randall, manager Salt Lake Electric Supply Company.

G. W. Forsberg, manager Wasatch Electric Company.

J. G. Guiver, manager Holding Electric Company.

Manufacturers

Robert Miller, manager Salt Lake City branch, General Electric Company.

W. A. Moser, manager Salt Lake City branch, Westinghouse Electric & Manufacturing Company.

B. E. Rowley, manager Salt Lake City branch, Edison Electric Appliance Company.

T. J. Stevens, manager Stevens Sales Company.

Central Station

D. C. Green, vice-president and general manager Utah Power & Light Company.

P. M. Parry, commercial manager Utah Power & Light Company.

H. M. Ferguson, manager Salt Lake division, Utah Power & Light Company.

R. M. Bleak, superintendent lighting and appliance sales, Utah Power & Light Company.

Telephone Company

O. J. Hyde, manager Mountain States Telephone & Telegraph Company.

The board of trustees met on Dec. 8 and elected the following officers to serve for the coming year: C. B. Hawley, manager Inter-Mountain Electric Company, president; George R. Randall, manager Salt Lake Electric Supply Company, vice-president; R. M. Bleak, superintendent lighting and appliance sales, Utah Power & Light Company, secretary and treasurer.

Mr. Hawley succeeds H. M. Ferguson; Mr. Randall succeeds Mr. Hawley, and Mr. Bleak succeeds himself.

New Mexico Association to Hold Convention in February.—The 1925 convention of the New Mexico Electrical Association will be held at Albuquerque, N. M., Feb. 16-18, 1925. Convention headquarters will be at the Franciscan Hotel.

Utility Problems Discussed at Speakers' Bureau Meeting

In order better to acquaint the utility employees of Denver, Colo., with the work which their various companies are doing in the education and promotion of public speaking through the speakers' bureau of the Rocky Mountain Committee on Public Utility Information, a general meeting, the first of its kind in the mountain region, was held Dec. 4 with over 500 in attendance.

According to R. B. Bonney, chairman of the bureau, the occasion was also intended as a "recital" evidencing the work of the public speaking class which is now in the middle of its second year. Another purpose was to inform the employees attending the meeting of some of the problems of the local utilities with which they are associated.

Several numbers on the program were so arranged that exposition could be given to the work of the educational

COMING PACIFIC COAST ELECTRICAL ASSOCIATION MEETINGS

Hydraulic Power Bureau, Technical Section—

Hotel Fairmont, San Francisco, Calif.
Jan. 7, 1925

Underground Systems Bureau, Technical Section—

Hotel Fairmont, San Francisco, Calif.
Jan. 7, 1925

Meter Bureau, Technical Section—

Hotel Fairmont, San Francisco, Calif.
Jan. 7, 8, 1925

Accident Prevention Bureau, Technical Section—

Hotel Fairmont, San Francisco, Calif.
Jan. 7, 8, 1925

Overhead Systems Bureau, Technical Section—

Hotel Fairmont, San Francisco, Calif.
Jan. 7-9, 1925

Apparatus Bureau, Technical Section—

Hotel Fairmont, San Francisco, Calif.
Jan. 8, 1925

General Meeting, Technical Section—

Hotel Fairmont, San Francisco, Calif.
Jan. 8, 1925

Inductive Co-ordination Bureau, Technical Section—

Hotel Fairmont, San Francisco, Calif.
Jan. 9, 1925

Prime Movers Bureau, Technical Section—

Hotel Fairmont, San Francisco, Calif.
Jan. 9, 1925

Safety Rules Bureau, Technical Section—

Hotel Fairmont, San Francisco, Calif.
Jan. 9, 1925

Executive Committee, Technical Section—

Hotel Fairmont, San Francisco, Calif.
Jan. 9, 1925

and service organizations of the industry such as the Utility Information Committee and the Electrical Cooperative League of Denver.

H. H. Argabrite, manager of the telephone department of the Western Electric Company in Denver and instructor of the speakers' class since its inception, was the headliner on the program.

Washington Town to Receive Electric Service.—The town of Oroville, Wash., will be supplied with light and power by D. J. Broderick and Eugene Hockett, who have been granted a franchise for erection and maintenance of an electric lighting, heating and power system in the town. The project provides for erection of a dam on the Similkameen River.

Manufacturer, Dealer and Jobber Activities

Charles Hartley of Ogden, Utah, has opened a new electrical store at 2309 Washington Avenue, in that city, where he will handle, among other lines of electrical merchandise, Universal appliances. Mr. Hartley established an electric wiring and motor shop three years ago, and within a year added appliances and fixtures, making a complete electrical store.

The Estate Stove Company, Hamilton, Ohio, has announced the establishment of its Pacific Coast office and sample room in the Fitzhugh Building, 366 Post Street, San Francisco, Calif. Sidney A. Beck is the Pacific Coast representative of the company in the northern division of its territory.

The B. & R. Electric Supply Company has been appointed distributor of Westinghouse lamps in Denver, Colo. Bue Carlton, well known to the electrical industry of Denver as a jobber's salesman, is now connected with that company.

Benjamin Electric Manufacturing Company, formerly located at 847 West Jackson Boulevard, Chicago, Ill., has removed to 120-128 South Sangamon Street, that city. Its San Francisco, Calif., office and warehouse, formerly at 580 Howard Street, are now located at 448 Bryant Street. This company is featuring a fall window-trimming contest, which closes at midnight Dec. 31, 1924.

R. D. Phillipps has taken over part of the floor space in the Altadena Electric Shop, 749 Mariposa Street, Altadena, Calif., and installed a complete line of radio equipment.

The Tubular Woven Fabric Company has appointed R. F. Whitmore as sales representative of that company in the Rocky Mountain region. Mr. Whitmore is also the representative of Hart & Hegeman and the Johns-Pratt Company.

The New England Electric Company, Denver, Colo., has announced the addition of Harry LeClair to its sales force.

The Miller Company, Meriden, Conn., arranged an experimental campaign with the Public Service Company of Colorado early in December on portable lamps, preparatory to a major campaign to be staged in the early spring.

The Globe Electric Supply Company, Denver, Colo., has been appointed sales agent for the Transmission Tower Fabrication Company in Colorado, Wyoming, Utah, Idaho and northern New Mexico. The Globe company has also added a radio department, according to a recent announcement of Paul A. Douden, its president and manager.

A. M. Byers Company, Pittsburgh, Pa., has published Bulletin No. 26A, "What Is Wrought Iron?", which supersedes Bulletin No. 26.

The Pacific Electric Motor Company, Oakland, Calif., has announced the opening of a new modern service and industrial supply plant, well equipped and stocked for giving industrial electric service, at Tenth and Oak Streets, that city.

The Locke Insulator Corporation, Victor, N. Y., has announced the removal of its sales and engineering departments from Victor to the Maryland Trust Building, Baltimore, Md., where its executive offices are situated, effective Dec. 1. Effective Jan. 1, 1925, three new district offices will be established: One at 766 Illinois Merchants Bank Building, Chicago, Ill.; one at 803 Atlantic Building, Philadelphia, and the other at Victor, N. Y.

Gardner's Electric Shop, formerly at 2552 East Colorado Street, Lamanda Park, Calif., is now located at 3215 East Colorado Street, in the new store building erected by W. A. Gardner, owner.

O. S. Peterson Company, electrical contractor-dealer, formerly located at 316 East Seventh Street, Long Beach, Calif., is now occupying its new store at 642 American Avenue, that city. The entire floor space is given over to Maytag washing machines.

The Griscom-Russell Company, 90 West Street, New York, has placed on the market the G-R sectional condenser, which should have particular interest to oil refinery men. Built in two or more sections, it will operate either as a standard, reflux or partial condenser, and may also be used as a condenser and heat exchanger at the same time. It is described fully in Form 198, published by the company.



"Shorty" Sherman, of the Illinois Electric Company, Los Angeles, Calif., demonstrating that he knows how to follow through with the old apple chaser as well as he knows how to follow an order.

The Chandeysson Electric Company, St. Louis, Mo., is building a three-story reinforced concrete addition to its plant. The first unit is nearly completed.

The Ohio Brass Company, Mansfield, Ohio, has distributed a folder setting forth the advantages of its National trolley guard, which it is claimed will improve conditions at any trolley line crossing of steam railroad tracks.

The Detroit Battery Charger Company, Detroit, Mich., has announced a new battery charger, known as Debo Duplex, which it is claimed gives double charging efficiency and cuts the cost in half. Full details may be had by addressing the company at 2963 Grand River Avenue.

The P. A. Geier Company, Cleveland, Ohio, manufacturers of Royal electric cleaners, has announced a Prosperity Sales Contest, open to dealers' salespeople, beginning Jan. 4, 1925. One hundred and nineteen cash prizes aggregating close to \$5,000 are offered to those who sell the largest number of Royal cleaners within the ten weeks of the contest. In addition, a cash bonus will be given to every entrant who qualifies by selling a small minimum number of machines.

Maydwell & Hartzell, Inc., San Francisco, Calif., has made public the fact that it has purchased the building occupied by it at Eleventh and Natoma Streets, that city.

The Wesco Company, Inc., Denver, Colo., has been appointed sales representative of the Triangle Conduit Company, Inc., Brooklyn, N. Y., in the States of Colorado, Wyoming, New Mexico and Utah. A complete line of armored cable, flexible metallic conduit and non-metallic conduit will be handled.

The Ferrell Electric Company, Montezano, Wash., recently opened a new electric shop in that city, under the ownership of Robert Ferrell. It will engage in electrical contracting and conduct a retail store.

Alex Hibbard, Inc., has moved its offices in Denver, Colo., to 1940 Blake Street, where warehousing facilities and truckage are available.

The Electric Store, Eugene, Ore., a partnership composed of L. C. Mack and C. A. Elkins, was recently opened. The concern will do a general contractor-dealer business. Mr. Mack was formerly proprietor of Mack's Electrical Supply Company of Eugene, and Mr. Elkins was until recently a member of the electrical engineering department of the Southern Pacific Company at Beaverton.

The Westinghouse Electric & Manufacturing Company has recently put on the market a new 300-volt type LV autovalue lightning arrester for protection to 110 and 220-volt secondary circuits of distribution transformers. These arresters are said to be particularly valuable in sections where one distribution transformer serves an entire street, with low voltage lines running 500 to 1,000 ft. to the customers' premises. The protection of these circuits has always been a considerable source of trouble, especially in the summer time when watt-hour meter blowouts, flashovers, blown fuses and general trouble have often been caused by lightning discharges. This new type LV arrester has been designed to remedy this trouble. It has a split porcelain case containing four standard LV discs and two metal end plates to which 30-in. line and ground leads are attached. The breakdown voltage of the arrester is about 1,400 volts RMS, and the breakdown voltage of the watt-hour meter which it protects is 2,700 volts to the ground.

NePage McKenny Company, electrical engineers and contractors, Armour Building, Seattle, Wash., received the contract for electrical wiring in the proposed \$400,000 Church of the Blessed Sacrament in Seattle.

Bailey, Wyatt & Lyng, electrical dealers, Seattle, Wash., have moved from 1623 Third Avenue to 1914 Fourth Avenue, where they have larger quarters for the manufacture, design and display of lighting fixtures.

Personals

Guy C. Earl, recently elected president of the Great Western Power Company, San Francisco, Calif., was born May 7, 1860, on a farm near Red Bluff, Calif. He attended the Oakland high



GUY C. EARL

school and the University of California, from which he was graduated with the degree of A.B. in 1883. Following his graduation, he studied law in the office of Estee & Boalt. In October, 1885, he was made chief deputy county clerk of Alameda County and in 1886 was admitted to the bar by the Supreme Court of California. He became assistant district attorney of Alameda County in July, 1887, holding the office for two years, and then retired to private practice in Oakland as co-partner with the late Judge S. P. Hall, under the firm name of Hall & Earl. He was elected state senator from Alameda County in November, 1892, and served four years. In July, 1895, he moved his law office to San Francisco and joined the legal staff of Garber, Boalt & Bishop. On the retirement of Judge Boalt from practice and the withdrawal of Judge Garber from the firm in 1896, he formed a partnership with Thomas B. Bishop, Charles S. Wheeler, L. M. Hoefler and William Rix, under the firm name of Bishop & Wheeler. He withdrew from this firm in 1900 and thereafter practiced law alone in San Francisco. In 1905 he organized the Great Western Power Company and since has been vice-president and general counsel. He has been a regent of the University of California since 1902. He is actively interested in agriculture and is the owner of several ranches. Mr. Earl is a member of Beta Theta Pi fraternity, of the Big C Society and the Order of Golden Bear of the University of California. He also belongs to the Bohemian Club, Faculty Club, Berkeley Club, Claremont Country Club, San Francisco Golf and Country Club and Tule Belle Gun Club, and is a member of the First Congregational Church of Oakland.

F. Wieser, dealer in electrical supplies at Woodland, Calif., recently paid a visit to San Francisco.

F. R. Smalley, active in practically all affairs of the San Diego Electric Club, and traffic manager for the San Diego Electric Railway Company, San Diego, Calif., resigned the latter position last month to accept the general managership of the Parlor Car Tours Corporation, a new company organized to conduct de luxe auto coach scenic tours between Los Angeles and San Francisco. Mr. Smalley is to make his headquarters in San Francisco.

Earl C. Myers has moved his appliance store into larger quarters at 30th and University Avenues, San Diego, Calif. The new store provides considerably more floor space and two large windows that are being used to good advantage in the display of electrical wares. Mr. Myers is pioneering in the use of colored flood lighting and stop lighting of his window displays.

C. E. Magnusson, dean of the college of electrical engineering, University of Washington, Seattle, Wash., addressed the November meeting of the Seattle section of the A.I.E.E. on the "World Power Conference," at which he was a visitor.

F. M. Kimball, manager motor department, General Electric Company, Boston, Mass., was recently a visitor in San Francisco, Calif.

O. Whitmire, for the past year Boston stores manager for the Western Electric Company, has been appointed to succeed R. B. Gordon as New York stores manager for that company.

A. F. Herwig, Public Utilities Bureau, Milwaukee, Wis., spent some time in San Francisco, Calif., recently.

C. E. Grunsky, president of the American Society of Civil Engineers, accompanied by his daughter, Miss Clotilde Grunsky, contributing editor of Journal of Electricity, both of San Francisco, Calif., visited Spokane, Wash., on Oct. 28 and 29 in the course of their journey homeward from Ann Arbor, Mich., where Mr. Grunsky presided at a convention of the Society. On Oct. 28 he was guest of honor at a banquet given by the Spokane branch of the American Society of Civil Engineers.

Earl W. Taylor, formerly Chicago, Ill., district sales manager of the Gainaday Electric Company, and more recently Pacific Coast district manager of the Voss Brothers Manufacturing Company, has been made district manager of the Home Appliance Company and will make his headquarters at 802 East Colorado Street, Pasadena, Calif., where he will feature Maytag washers.

L. A. Knott, representing the Sangamo Electric Company in San Francisco, Calif., recently left to attend a sales convention at the factory in Springfield, Ill.

L. A. Hobbs, who handles lighting equipment in Los Angeles, Calif., paid a recent visit to San Francisco.

Herbert C. Moss, electrical contractor, Seattle, Wash., received the contract for the installation of 103 ornamental street lights in the city of Kelso, Wash. The lights will be installed on concrete posts, with a Solux globe and glass canopy.

Clarence Hunt, Pacific Coast representative for Robbins & Myers Company, Springfield, Ohio, has left for a thirty-day trip through the Northwest and to the factory. Mr. Hunt will visit Portland, Ore., Seattle and Spokane, Wash., and other northern cities and will then go to Springfield, where he will spend some time.

P. P. Ashworth, distributing engineer, Utah Power & Light Company, Salt Lake City, Utah, read a paper on "The Distribution of Electrical Energy" before a recent meeting of the Salt Lake City Section of the American Institute of Electrical Engineers.

J. B. Odell, manager New York telephone distributing house of the Western Electric Company, has been appointed assistant to the president of that company.

Frank E. McKenna, manager of the Mountain States Power Company at Corvallis, Ore., has recently been elected to the city council of Corvallis.

J. E. McAuliffe, Triangle Conduit Company, Inc., Brooklyn, N. Y., made a recent business trip to Denver, Colo.

R. J. McBride, who has been acting as distribution specialist in the Western Electric Company's New York telephone department, has been named Boston stores manager for the company, succeeding O. Whitmire.

C. R. Durling, president of the Monitor Controller Company, Baltimore, Md., recently visited the Pacific Coast in the interests of his firm. Mr. Durling spent some time in Los Angeles and San Francisco, Calif., and Seattle, Wash.

R. F. Whitmore has been appointed representative in the Rocky Mountain territory for the Tubular Woven Fabric Company, Pawtucket, R. I. Mr. Whitmore will make his headquarters in Denver, Colo.

E. T. Steel, for eighteen years associated with interests managed by Stone & Webster, Inc., and until recently assistant to the chairman of the board of directors of that company, recently arrived in Portland, Ore., to assume the duties of manager of the southern district of the Puget Sound Power & Light Company. He succeeds R. M. Boykin, who was made manager of the central division of the company, with headquarters at Seattle, Wash. Mr. Steel was



E. T. STEEL

born in Vermont and graduated from the Massachusetts Institute of Technology, Boston, Mass., in 1906. Immediately after his graduation he entered the employ of Stone & Webster, Inc. He has served as manager of the Ponce Electric Company, Ponce, Porto Rico, as general superintendent of the Savannah Electric Company, Savannah, Ga., and for the past twelve years has held executive positions in the Boston offices of Stone & Webster, Inc.

H. B. Sewell, manager of the Puget Sound Power & Traction Company, Bellingham, Wash., recently appeared before the Washington Club and spoke on the Baker River power project.

F. H. Woodward, general sales manager of the Great Western Power Company, San Francisco, Calif., recently visited the permanent electric home exhibit in Sacramento.

A. Emory Wishon, general manager of the San Joaquin Light & Power Corporation, Fresno, Calif., has gone to New York City to attend the meeting of the National Customer Ownership Committee of the N.E.L.A. held Dec. 9 and the meeting of the National Executive Committee held Dec. 10.

Charles A. Etem, manufacturers' representative, formerly of Minneapolis, Minn., recently established himself in Los Angeles, Calif., at 3804 Third Ave., where he will represent the Leich Electric Company, Genoa, Ill., and the Metsch Refractories Company, East Liverpool, Ohio.

F. W. Wight, of the United States Steel Corporation, San Francisco, Calif., recently spoke before the Sacramento Valley Electrical Society, Sacramento, Calif., and told of the development of steel. Mr. Wight illustrated his talk with lantern slides.

R. G. Boyles, until recently assistant superintendent of distribution, Southern California Edison Company, Los Angeles, Calif., has been made superintendent of distribution of that company. Mr. Boyles has to his credit a record of eighteen years of service with the Edison company, having entered its employ in 1906 as a lineman. After six months he was transferred to the overhead department of the Los Angeles district. In 1907 he was appointed foreman of the Los Angeles trouble department and retained that position until 1912, when he became district foreman at Redondo, Calif. At the end of three years he was made district foreman of the Po-



R. G. BOYLES

mona district, where a number of new lines was built under his direction. In 1922 he was appointed superintendent of the Long Beach district. Shortly after, due to the rapid growth of the company's operating department, it was deemed advisable to divide the distribution department into four divisions, and Mr. Boyles was made division superintendent of the coast division. From that post he was advanced to that of assistant superintendent of distribution.

W. C. Sterne, president and general manager, Summit County Power Company, Denver, Colo., was recently re-elected chairman of the Rocky Mountain Committee on Public Utility Information, Denver; **Ray Morris**, general commercial manager, Mountain States Telephone & Telegraph Company, was re-elected vice-chairman, and **V. L. Board**, general superintendent, Public Service Company of Colorado, was re-elected secretary and treasurer.

C. H. Tallant has been appointed advertising manager for the Drake Locknut Company, San Francisco, Calif.

W. R. Stinemetz, formerly manager of the heavy traction division, and **K. A. Simmon**, formerly manager of the light traction division, Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., have been appointed assistants to the manager of the railway department of that company. **A. J. Manson**, until recently manager of the transportation division of the company's New York office, succeeds Mr. Stinemetz, and **E. A. Palmer**, formerly manager of the transportation division of the San Francisco office, will take Mr. Simmon's place. The changes have been made for the purpose of carrying on a more intensive study of transportation requirements and service to the transportation industry.

E. R. Nash, Monterey Electric Works, Monterey, Calif., was a recent visitor to San Francisco.

W. F. Raber, general manager of the San Diego Consolidated Gas & Electric Company, San Diego, Calif., returned from a trip to Chicago, Ill., late in November. He was appointed as one of the directors of the Standard Gas & Electric Company, the holding company under which many of the Byllesby properties are controlled. **H. H. Jones**, formerly general manager of the San Diego company and now vice-president of the Standard Company, in charge of operations of the Northern States Power Company, was also named on the board of Standard, as was **Samuel Kahn**, general manager of the Western States Gas & Electric Company, Stockton, Calif. The increased directorate has been created, it was announced, for the purpose of broadening executive responsibility in the functioning of subsidiary companies to include operating executives of the operated companies on the board.

E. S. Higgings, of the Pacific Telephone & Telegraph Company, Portland, Ore., was recently in San Francisco, Calif., on business.

W. K. Cates, of the Westinghouse Electric & Manufacturing Company, San Francisco, Calif., has recently been transferred to Sacramento, where he will have permanent headquarters. Mr. Cates will assist "Steve" Gamble in sales engineering work in the Sacramento Valley.

George A. Campbell, Reno Light & Power Company, Reno, Nev., was a recent visitor in San Francisco, Calif.

J. B. Black, general manager of the Great Western Power Company, San Francisco, Calif., has been made vice-president of the company, succeeding **Herbert Fleishhacker**, who recently resigned. His rise in the utility field has been rapid, and the progress that has brought him to the position which makes him one of the youngest central station executives in the country has

made his career an interesting one. Immediately upon graduation from the University of California in 1912, Mr. Black entered the commercial department of the Great Western Power Company. Six years later he was appointed general sales manager, and in 1922 he was made general manager. Mr. Black is a prominent and active worker in the electrical industry. He has served as president of the Pacific Coast Electrical Association and is now on the executive committee of that organization as well as a member of the public policy section. Prior to his election as president of the association he was vice-president



J. B. BLACK

for one term. He was formerly a member of the advisory committee of the California Electrical Cooperative Campaign.

Obituary

John Lyell Harper, vice-president and chief engineer, the Niagara Falls Power Company, Niagara Falls, N. Y., died Nov. 28, following an operation for appendicitis. Mr. Harper became associated with the Niagara Falls Hydraulic Power & Manufacturing Company in 1902 as assistant to the engineer, becoming chief engineer two years later. From that time until 1918 the installed capacity of the company's plants in the gorge below the falls grew under his direction from 14,000 to 160,000 hp. During the war the Niagara Falls Hydraulic company was merged with other interests to form the Niagara Falls Power Company, and Mr. Harper was made chief engineer, later becoming also vice-president. In the early part of his career he was employed by the Oregon Improvement Company and the Union Electric Company, both of Seattle, Wash., was operating and construction engineer with the Twin City Rapid Transit Company, and a year later became associated with I. W. Gray & Company, both of Minneapolis, Minn. As a member of the staff of Floy & Carpenter, consulting engineers of New York City, he had charge of the design and construction of the Apple River hydroelectric power plant for the St. Croix Power Company, Somerset, Wis.

Trade Outlook

San Francisco

With the holidays only a short while distant, Christmas buying has taken on an added impetus. Department stores in particular are crowded, and good sales volume is reported. General rains have done much to stimulate buying, especially in the adjacent country districts, and jobbers report numerous fill-in orders.

Electrical dealers state that they are experiencing a holiday demand for percolators, waffle irons, grills and toasters, but that sales have not yet attained the volume anticipated. Washing machines are moving well. Radio sets and parts continue to lead, and sales of high-priced sets are particularly good. Central stations are well pleased with the recent heavy rainfall.

An indication of substantial growth and prosperity is indicated by the construction record for the past eleven months. The number of building permits issued for that period exceeds that of any previous full year, with the exception of 1907, the year following the earthquake and fire.

Business circles in general are gratified by the recent announcement that San Francisco has been made the buying center for all supplies used in federal buildings west of the Rocky Mountains. These supplies include a large number of tools, brooms, sanitary articles, woodenware, hardware and numerous other items.

Los Angeles

The fall activity which has been evidenced in the wholesale and retail trade in Los Angeles during the past two months continues with prospects bright for further continuation during the holiday season and on into the new year.

Electrical retail conditions are much improved, and sales in some instances run above those of last year. This is especially true of electrical appliances, and, in turn, this prosperity is reflected in the larger household devices. Radio sales continue at an unabated pace, and some manufacturers find difficulty in keeping up to the demand being made upon them. The sale of parts and supplies also keeps up with the sale of sets. Jobbers and manufacturers report good business conditions prevailing, and the sale of appliances by the retail trade is reflected in increased sales on the part of the jobbers in their particular lines.

While the building permits shown for the past month are somewhat below the same period of last year, they are an improvement over the summer months. Real estate remains unchanged. Petroleum production has declined slightly, but the investment market has continued at the strong pace set during September.

Portland

The year just closing has been a satisfactory one for the large majority of the people of Oregon. Although in some sections weather conditions have caused crop failures, wheat and hay,

constituting about two-thirds of the value of all Oregon crops, have been in ready demand at good prices. Wool is now well above the ten-year average price.

The shipping through the port of Portland continues to gain. The volume of new lumber orders is well above both production and shipments for the first time in several months. Mills for the past three months have been operating at about normal capacity and in excess of shipments and new business. Since election the situation has greatly improved, and the market is now distinctly a seller's market. Prices, particularly at the pine mills, have increased slightly. General optimism prevails regarding the 1925 outlook.

Since Sept. 1, rainfall at Portland has been about 15 in., or slightly above normal. Central stations are able to carry better than 90 per cent of their load on hydro.

Holiday sales to date have not been unusually heavy. Building in Portland this year is expected to break all former records.

Denver

Strengthening of the financial condition of the agricultural areas in this region, due principally to a successful beet harvest and a favorable market on sugar, is showing its effect in all lines of business. Coupled with continuing activity in the oil fields, the commercial and industrial outlook is a promising one.

Fall business as reported by various central stations on returns from the sale of power and merchandise took a spurt in October and held up in November. Unless all signs fail, December will produce a new record in these lines. There is a genuine feeling of optimism, especially in electrical channels. This is favoring additional construction and extensions by central stations. Appliance sales are on the upgrade and holiday demand for this class of merchandise, including radio, is very favorable. Reports from both jobbers and dealers verify this condition.

Autumn weather until the first of December retarded sales in clothing and fuel. Radio and the automobile business profited as a result, and new building kept up. Building labor has prospered, and the only untoward aspect in this situation is the probability of wage increase demands early in the new year.

Spokane

Retail trade is improved, and excellent business is anticipated for the holidays.

Building permits in Spokane for the first eleven months of 1924 amounted to nearly \$3,000,000, or 20 per cent more than for the same period in 1923.

Employment conditions in Spokane manufacturing plants are normal. A survey made in November by the Chamber of Commerce covered 128 plants, and in the majority of cases business conditions, present and prospective, were reported fair to very good.

Output of packing houses is normal, and deliveries of live stock are good, with good prices. On Nov. 20, 54 carloads of stock were received, this being a record. The woodworking plants all report improved conditions, and some are contemplating operating at two or three shifts in order to take care of increased orders.

The mines of the Coeur d'Alene district in Idaho will show a production of \$25,000,000 worth of minerals for 1924, of which amount approximately 20 per cent will be distributed as dividends.

Seattle

Seattle electrical jobbers and dealers report Christmas buying well underway, sales of tableware and domestic appliances showing especial strength. Christmas tree outfits are becoming more in demand each year, and sales have started on these, although not strongly. Range sales have shown considerable increase, due to various cooking school demonstrations, which were largely attended. Lamp sales, both residential and industrial, are encouraging and for the beginning of the season are above normal. Prices in all lines generally are holding firm.

An extremely marked improvement in the lumber industry is noted since the recent election, with increasing confidence on every hand.

Building is holding up, with much activity in construction of the better types of homes. During the third week in November, permits for sixty-nine homes were issued, a record for this season of the year. There are few business buildings planned for the winter, but a number of apartments and flats are contemplated.

Unemployment has been increasing, due to migration of workers to Seattle upon cessation of seasonal work in Alaska, eastern Washington and Idaho and completion of several large hydroelectric and reclamation projects near Seattle.

Salt Lake City

Merchants generally report business as good, with the Christmas buying stimulus very much in evidence. Electrical dealers are securing a fair share of Christmas business.

The announcement made by the Utah Power & Light Company that work will be under way in the near future on the construction of Utah's largest hydroelectric plant at the Cutler site on the Bear River, with the expenditure of \$5,500,000 and the employment of 1,000 men for two years, is an excellent indication of the favorable outlook for future business in the Intermountain territory.

The mining industry continues to thrive, and during the latter part of November, Park City, one of the largest silver-lead camps in this territory, surpassed all records for ore output after operating steadily for a period of fifty years.

The building of the Salt Lake basin irrigation project is now assured by President Coolidge's approval of the appropriation by Congress of \$1,275,000 for that purpose. The expenditure of this amount of money and the construction of this project mean much to the prosperity of this section, where irrigation is the very life of the agricultural industry.





